

From: Tom Birmingham
Sent: Tuesday, March 1, 2011 11:54 AM
To: 'Larrabee, Jason'
CC: joe.findaro@akerman.com; 'Bernhardt, David L.'
Subject: FW: USBR/DOI hearings this week

Importance: High

Jason,

Thank you for the opportunity to suggest questions. For Reclamation I would suggest the following:

1. The Mid-Pacific Region has proposed the creation of a "Bay Delta Office." What will be the purpose of this office?
2. How many people will work at this "Bay Delta Office"?
3. Will the creation of this office do anything other than add another bureaucratic layer to the government structure created to deal with restoration of the Delta ecosystem and water supplies for Central Valley Project contractors?
4. How much will it cost to operate this "Bay Delta Office"?
5. Will these costs be reimbursable?
6. The south-of-Delta water service contracts provide that the contracting officer will communicate, coordinate, and cooperate with the contractors on any action that will materially affect "Project financial matters including, but not limited to, budget issues." Has Reclamation coordinated or communicated with the contractors on the creation of this "Bay Delta Office"? [The answer is no.]
7. A portion of my district includes an area of the San Luis Unit that is in the proposed drainage service area. How much is Reclamation proposing for inclusion in the budget for implementation of the drainage record of decision?
8. This is an activity that Reclamation has estimated costing \$2.7 billion. How will Reclamation implement the record of decision with such meager appropriations?

I hope these are helpful.

Tom

-----Original Message-----

From: Larrabee, Jason [<mailto:Jason.Larrabee@mail.house.gov>]
Sent: Tuesday, March 01, 2011 4:20 AM
To: 'joe.findaro@akerman.com'; [REDACTED]; [REDACTED]; 'nwilliams@swaconsult.com'; 'BBuck@sfcwa.org'; 'dan.nelson@sldmwa.org'; 'jpeltier@westlandswater.org'; 'tbirmingham@westlandswater.org'; 'schedester@sbcglobal.net'; 'rjacobsma@friantwater.org'; 'tewater@olaughlinparis.com'
Subject: USBR/DOI hearings this week
Importance: High

Good morning,

Congressman Denham will be participating in FY 12 budget hearings tomorrow (USBR) and Thursday (DOI) and I'd like to solicit any questions you would like him to consider asking/submitting for the record. Questions can be on the budget proposal or policy.

I'm sorry for the short notice, but I will need these by 5pm ET today for USBR and 5pm ET Wednesday for DOI.

Thank you in advance.

Jason

From: Jason Peltier
Sent: Wednesday, March 2, 2011 1:12 PM
To: 'Weaver, Kiel'; joe.findaro@akerman.com; David Bernhardt
CC: 'Tom Birmingham (Office)'; 'Bill Kahl'
Subject: i cannot think of a proper subject line...

<http://garamendi.house.gov/2011/03/rep-garamendis-statement-to-california-assembly-water-committee-exposes-danger-of-house-gop-spending.shtml>

Rep. Garamendi's Statement to California Assembly Water Committee Exposes Danger of House GOP Spending Bill on CA Water Access

WASHINGTON, DC – Congressman John Garamendi (D-Walnut Creek, CA), a member of the House Natural Resources Committee and a former Deputy Secretary of the U.S. Interior Department, today submitted a written statement to the Assembly California State Assembly Committee on Water, Parks and Wildlife for their "Oversight Hearing on Risks to California's Water and Wildlife from Proposed Reductions and Eliminations of Federal Funding."

"Ultimately, these reckless proposals would harm California. Jeopardizing the restoration of the Sacramento-San Joaquin Delta, stopping implementation of the San Joaquin River settlement, disrupting the Klamath River agreements and attempting to delay the Bureau of Reclamation's water efficiency efforts is not in the interest of California and its people," Congressman Garamendi said in his statement.

Congressman Garamendi's complete statement is below:

"Dear Members of the California State Assembly Committee on Water, Parks and Wildlife:

"As a member of the United States House of Representatives Committee on Natural Resources, and former Deputy Secretary of the United States Department of the Interior, I believe H.R. 1, the House Republican Continuing Resolution, would jeopardize the restoration of the Sacramento-San Joaquin Delta, stop implementation of the San Joaquin River settlement, disrupt the Klamath River agreements and attempt to delay the Bureau of Reclamation's water efficiency efforts.

"Developing California water policy requires sound science, careful planning and study, and reasoned debate.

"However, H.R. 1 can have severe impacts on the California economy and harm the state's ability to determine its water future.

"Section 1475, authored by Congressman Devin Nunes, of H.R. 1 defunds the critical biological opinions set forth in the 1986 Coordinate Operations Agreement, which are important elements of the plan to provide California with a balanced water strategy.

"Section 1475 would disrupt the legal process and could once again force judicial action related to the Endangered Species Act and fish in the Sacramento-San Joaquin Delta, halting statewide water distribution and imperiling thousands of California jobs, including in the agricultural and fishing industries dependent on reliable access to water.

"Moreover, Section 1475 also disregards eighteen years of litigation that successfully brought an end to a longer conflict over water rights at the San Joaquin River. A settlement was reached that is agreed to by almost everyone, including local officials, fisherpersons, farmers, environmental leaders, and water districts.

"Amendment #296, authored by Congressman Tom McClintock, to H.R. 1 would prohibit funds from being made available to implement the Klamath Dam Removal and Sedimentation Study. This would

disrupt agreements among dozens of stakeholders to ensure salmon restoration and ensure water and power availability to farmers in the region.

"Related, amendments #286 and #289 also written by Congressman McClintock would have defunded the ability of the U.S. Bureau of Reclamation to implement Title XVI Water Reclamation and Reuse Program and WaterSMART grant program. Both of these programs are essential to more efficiently using our limited water supplies in California and throughout the Western United States.

"Ultimately, these reckless proposals would harm California. Jeopardizing the restoration of the Sacramento-San Joaquin Delta, stopping implementation of the San Joaquin River settlement, disrupting the Klamath River agreements and attempting to delay the Bureau of Reclamation's water efficiency efforts is not in the interest of California and its people.

"Thank you for your attention to this critical issue. Californians must be made aware of the drastic, disturbing, and far reaching consequences of H.R. 1 on our state's natural resources, economy and way of life.

"Sincerely,
JOHN GARAMENDI
Member of Congress"

From: Jason Peltier

Sent: Monday, March 28, 2011 7:16 AM

To: Kiel Weaver; David Bernhardt; joe. findaro@akerman. com; Ara Azhderian

Subject: Fwd: instructive

Attachments: birdbrain.dat; Untitled attachment 23939.htm; Reply.dat; Untitled attachment 23942.htm; Recommend.dat; Untitled attachment 23945.htm; Disapprove.dat; Untitled attachment 23948.htm; Share.dat; Untitled attachment 23951.htm; E-Mail.dat; Untitled attachment 23954.htm; Permalink.dat; Untitled attachment 23957.htm; Reply.dat; Untitled attachment 23960.htm; edwardsformula.dat; Untitled attachment 23963.htm; Reply.dat; Untitled attachment 23966.htm; Recommend.dat; Untitled attachment 23969.htm; Disapprove.dat; Untitled attachment 23972.htm; Share.dat; Untitled attachment 23975.htm; E-Mail.dat; Untitled attachment 23978.htm; Permalink.dat; Untitled attachment 23981.htm; Reply.dat; Untitled attachment 23984.htm; newsjunky.dat; Untitled attachment 23987.htm; Reply.dat; Untitled attachment 23990.htm; Recommend.dat; Untitled attachment 23993.htm; Disapprove.dat; Untitled attachment 23996.htm; Share.dat; Untitled attachment 23999.htm; E-Mail.dat; Untitled attachment 24002.htm; Permalink.dat; Untitled attachment 24005.htm; Reply.dat; Untitled attachment 24008.htm

Possible idea?

Begin forwarded message:

From: "Patterson,Roger K" <RPatterson@mw2h2o.com>

Date: March 27, 2011 1:49:59 PM PDT

To: Jason Peltier <jpeltier@westlandswater.org>, Laura King Moon <LauraK@swc.org>, Brent Walthall <bwalthall@kcwa.com>

Subject: Fwd: instructive

This should provide a good basis for a question at the hearing.

Begin forwarded message:

From: Jason Peltier <jpeltier@westlandswater.org>

Date: March 25, 2011 12:59:14 PM PDT

To: "tbirmingham@westlandswater.org" <tbirmingham@westlandswater.org>, Allison Dvorak Febbo <AFebbo@swc.org>, Ara Azhderian <Ara.Azhderian@sldmwa.org>, B Walthall <bwalthall@kcwa.com>, Bill Kahrl <bkahrl@westlandswater.org>, BJ Miller <[REDACTED]>, Byron Buck <BBuck@sfcwa.org>, Carolyn Jensen <cjensen@ka-pow.com>, Chris Beale <CBeale@resourceslawgroup.com>, Clare Foley <cfoley@farmwater.org>, Cliff Schulz <cschulz@kmtg.com>, Curtis Creel <ccreel@kcwa.com>, D Nelson <Dan.Nelson@sldmwa.org>, Ed Manning <emanning@ka-pow.com>, "frances. mizuno" <frances.mizuno@sldmwa.org>, "gholman@westlandswater.org" <gholman@westlandswater.org>, Greg Zlotnick <[REDACTED]>, "joe.findaro@akerman.com" <joe.findaro@akerman.com>, "jrubin@diepenbrock.com" <jrubin@diepenbrock.com>, "Kear,Adam C" <akear@mw2h2o.com>, Laura King Moon <Laurak@swc.org>, "Simonek,Laura J" <lsimonek@mw2h2o.com>, "[REDACTED]" <[REDACTED]>, Martin McIntyre <[REDACTED]>, Mike Henry <mhenry@farmwater.org>, Mike Wade <mwade@farmwater.org>,

"Neudeck,Randall D" <rneudeck@mwdh2o.com>, "Philp,Thomas S" <TPhilp@mwdh2o.com>, "Rodriguez, Larry" <lrodriguez@kcwa.com>, "Patterson,Roger K" <RPatterson@mwdh2o.com>, Sheila Greene <sgreene@westlandswater.org>, Sue Ramos <sramos@westlandswater.org>, Terry Erlewine <terlewine@swc.org>, Tom Boardman <tboardman@apex.net>, Tom Glover <tglover@westlandswater.org>, Tom Mongan <tmongan@westlandswater.org>, 'Valerie Connor' <vconnor@sfcwa.org>
Subject: instructive

Some of the 80 comments are a hoot too.

Sen. Feinstein hits Drakes Bay oyster farm report

[Peter Fimrite, Chronicle Staff Writer](#)

03/24/11

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The Drakes Bay Oyster Co. has a lease through 2012.

Hardy Wilson / The

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Sen. Dianne Feinstein accused the U.S. Department of the Interior on Wednesday of downplaying evidence of misconduct by National Park Service scientists who apparently wanted to get a popular shellfish operation kicked out of Drakes Bay.

The Interior Department's office of the solicitor released a report Tuesday outlining what it termed biased, improper, mistake-ridden work by scientists. But it concluded that the behavior did not rise to the level of intentional "scientific misconduct" - and that nothing criminal occurred.

"The National Park Service and the Department of the Interior have once again failed to grasp the severity of recent misconduct at Point Reyes National Seashore," Feinstein wrote in a letter to Interior Secretary Ken Salazar and Peggy O'Dell, the park service deputy director. The senator demanded immediate steps to eliminate political agendas and instill in employees "a rigorous and objective pursuit of scientific truth."

"It is critical," she said, that the government "publicly disavow the practice of selectively misusing and misconstruing science to achieve a desired outcome."

Feinstein's angry reaction to the report is the latest in a seething controversy over efforts by the Drakes Bay Oyster Co. to extend a lease past 2012 to harvest shellfish in the bay where Sir Francis Drake landed more than four centuries ago.

Kevin Lunny, a local rancher, purchased the oyster farm from Johnson Oyster Co. in 2005.

The problems started when Lunny expressed a desire to extend the oyster company's 40-year occupancy agreement in the estuary along the Point Reyes National Seashore. Shortly after that, park officials came out with reports alleging damage by the oyster farm to harbor seals, native eelgrass and the bay ecosystem.

Corey Goodman, a biological scientist who reviewed the Park Service studies, formally accused park officials of selectively presenting information, misrepresenting facts and essentially fudging data to support their contention that the oyster company was harming the ecosystem.

The report, prepared by attorney Gavin Frost, supports some of Goodman's allegations, including that scientists set up a covert camera to record harbor seal activity and then failed to disclose the information to investigators when the

images failed to show any disturbances to harbor seals by the oyster farm, according to the report.

"Anyone who stops and reads the details would see that there are major ethical breaches," Goodman said. The report, he said, confirms that scientists ignored the photos that contradicted their public claims and misused science to advocate a predetermined political agenda.

"Frost uses the word misconduct to describe their behavior, but disappointedly does not find formal scientific misconduct," Goodman said. "If this pattern of behavior over four years does not rise to the federal definition of scientific misconduct, then how will we ever prevent government officials from letting predetermined political agendas drive the misuse of science?"

Park supporters argued that the lack of a misconduct finding is essentially vindication for the park service scientists.

"This is a definitive affirmation that there is no scientific misconduct at Point Reyes and that multiple accusations of scientific misconduct over three-plus years are unfounded," said Neal Desai, associate director of the Pacific Region of the National Parks Conservation Association.

Desai said 75 percent of the people who submitted comments to the park service support ending the oyster farm lease and turning Drakes Bay into a marine wilderness area in 2012.

"Any mistakes the National Parks made in the past do not justify stripping this marine wilderness of protections," he said. "It is really important to consider what the public wants."

Goodman said the integrity of federally funded science is the real issue here, especially considering that the oyster farm case isn't the only one in which National Park Service data have been challenged.

Advocates for off-leash dog walking have accused park service officials of cooking up phony data in support of their desire to ban or severely restrict canines from the Golden Gate National Recreation Area. Accusations of scientific fudging also surfaced when park officials decided to round up and shoot hundreds of non-native deer along the Point Reyes seashore.

Feinstein inserted into an appropriations bill a 10-year extension of shellfish operations in Drakes Bay. The bill, which passed, gives Salazar discretion to extend the lease in 2012 if he chooses.

E-mail Peter Fimrite at pfimrite@sfchronicle.com.

*This article appeared on page **C - 1** of the San Francisco Chronicle*

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[birdbrain](#)

9:11 AM on March 24, 2011

Mr. Desai says 75 percent of people submitting comments want the oyster farm removed. What he doesn't say is that his organization, NPCA, and other national organizations like Sierra Club and Audubon, organized a national campaign to get comments submitted from all over the country. Many of those commenters have never been, and never will be, to Point Reyes National Seashore. Local people who know the oyster farm and know the Seashore support the farm and want the lease extended. Mr. Desai also claims "a definitive affirmation that there is no scientific misconduct" by NPS scientists, even though the DOI said the scientists produced, "biased, improper, and mistake-ridden work." One wonders what Mr. Desai would consider scientific misconduct if "biased, improper, and mistake ridden" is OK with him. At least we know that, when it comes to "science," "biased, improper, and mistake-ridden" is good enough for the National Park Service, Sierra Club, and Audubon.

REPLY

(14)

POPULARITY: 76

edwardsformula

11:28 PM on March 23, 2011

Fours years of surveillance at what cost?

REPLY

(6)

POPULARITY: 49

4 replies

newsjunk

5:44 AM on March 24, 2011

Thanks to Fimrite for mentioning that this is a PATTERN of scientific misconduct by NPS. They also fabricate bogus claims of flammability to justify the destruction of non-native trees in the service of their native plant restorations. Their agenda adds one over-riding goal: FORTRESS CONSERVATION. They believe that the parks are solely for the purpose of conserving native and animals. If any human or non-native animal gets in the way of that agenda, they fabricate a bogus excuse to throw them and eradicate them.

REPLY

(20)

POPULARITY: 42

14 replies

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Read more: <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2011/03/23/BAVH1II1E1.DTL#ixzz1HdvqufIB>

From: Tom Birmingham
Sent: Tuesday, March 29, 2011 2:40 PM
To: 'Craig Manson'; 'Bernhardt, David L.'
CC: 'Weaver, Kiel'
Subject: Questions for Dick Poole

Kiel Weaver asked for some help developing questions for Dick Poole, who will testify at a hearing on April 5. I told him that the two of you would be happy to help. Please expect a call from Kiel.

From: Jason Peltier

Sent: Friday, April 1, 2011 1:44 PM

To: 'Weaver, Kiel'; 'Ara Azhderian'; 'Bernhardt, David L.'

CC: 'Sheila Greene'

Subject: RE: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

Thanks Kiel. I passed this on to Sheila Greene, our super smart fisheries biologist. She may have suggested questions for you and I would suggest she "respond all" with any input. Thanks.

From: Weaver, Kiel [mailto:Kiel.Weaver@mail.house.gov]

Sent: Friday, April 01, 2011 11:52 AM

To: 'Jason Peltier'; 'Ara Azhderian'; 'Bernhardt, David L.'

Subject: FW: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

Have at it. Let me know if there are some good questions for him...

From: Dick Pool [mailto:████████@████████.████████]

Sent: Friday, April 01, 2011 2:48 PM

To: Lyle, Ian; rbpool@protroll.com

Cc: Fonokalafi-McMullen, Ana; Weaver, Kiel; Calimlim, Camille

Subject: RE: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

Dear Ian:

This will confirm my participation in the Subcommittee hearing on April 5th. Thank you for the invitation.

I am attaching a copy of my testimony, a PDF attachment that goes with the testimony and the Disclosure Form. If you need anything further, let me know.

Regards,
Dick Pool

Pro-Troll Fishing Products
5700A Imhoff Drive
Concord, CA 94520
(925) 825-8560
Fax (925) 825-8591
Cell (925) █████-█████
email rbpool@protroll.com
web www.Protroll.com

From: Lyle, Ian [mailto:Ian.Lyle@mail.house.gov]

Sent: Wednesday, March 30, 2011 2:02 PM

To: 'rbpool@protroll.com'

Cc: Fonokalafi-McMullen, Ana; Weaver, Kiel; Calimlim, Camille


Subject: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

Dear Mr. Poole,

Attached please find an invitation to testify at the Water and Power Subcommittee Oversight Hearing on *"Creating Abundant Water and Power Supplies and Job Growth by Restoring Common Sense to Federal Regulations"*. The hearing is scheduled for Tuesday, April 5, 2011 at 2:00 p.m., in room 1324 Longworth House Office Building. In addition to the invitation you will also find a disclosure form and guidelines regarding your oral and written testimony.

Please confirm receipt of this invitation and do not hesitate to contact us if you have any questions.

Thank you,
Ian

Ian Lyle
Republican Legislative Staff
Subcommittee on Water and Power
House Natural Resources Committee
1522 Longworth House Office Building
Washington, DC 20515
202-

[Website](#) | [Facebook](#) | [Twitter](#) | [YouTube](#)

From: Weaver, Kiel
Sent: Saturday, April 2, 2011 2:25 PM
To: Jason Peltier; 'Ara Azhderian'; 'Bernhardt, David L.'
CC: 'Sheila Greene'
Subject: RE: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

In particular, i would like to refute the following from his testimony:

The primary reason for the fall run crash was the policies of the government which allowed unlimited pumping of water from the Delta between 2000 and 2007. In the spring of each year, in excess of 30 million tiny salmon smolts migrate down the Sacramento River and through the Delta on their way to the ocean. Studies show that when the pumps run at maximum, up to 92% of these smolts are either lost in the river or are pulled into the central Delta where there is no foliage cover and there is no food. The result is that the smolts perish.

If you look at the fall run chart again, you'll see that in 2010 the trend was finally reversed and the run size increased. There are two factors that appear to be the primary reasons for this increase. In the spring of 2008, the Federal Court ruled that the biological opinion which was in place did not protect the salmon from extinction. Based on the scientific evidence, the court curtailed the spring 2008 pumping rate which cut the smolt mortality in the Delta. The result, three years later, was that the mature adults came back in increased numbers in the fall of 2010. Another factor which helped the 2010 recovery was trucking hatchery smolts around the Delta. In the spring of 2008, approximately 13 million hatchery smolts were trucked around the Delta to San Pablo Bay thereby avoiding the destruction by the Delta pumping. These two factors minimized the damage by the pumps. The improved 2010 returns show the results.

There are some who say the decline of salmon was caused by poor ocean conditions but this is contradicted by the fact that native delta fish, which never venture to the ocean, declined precipitously at the same time the pumps were ramped up and the salmon declined. In other words, the ocean conditions theory doesn't explain the loss of fish like the delta smelt that don't live in the ocean.

From: Jason Peltier [jpeltier@westlandswater.org]
Sent: Friday, April 01, 2011 4:44 PM
To: Weaver, Kiel; 'Ara Azhderian'; 'Bernhardt, David L.'
Cc: 'Sheila Greene'
Subject: RE: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

Thanks Kiel. I passed this on to Sheila Greene, our super smart fisheries biologist. She may have suggested questions for you and I would suggest she "respond all" with any input. Thanks.

From: Weaver, Kiel [mailto:Kiel.Weaver@mail.house.gov]
Sent: Friday, April 01, 2011 11:52 AM
To: 'Jason Peltier'; 'Ara Azhderian'; 'Bernhardt, David L.'
Subject: FW: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

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From: Dick Pool [mailto: [REDACTED]@ [REDACTED]]
Sent: Friday, April 01, 2011 2:48 PM
To: Lyle, Ian; rbpool@protroll.com
Cc: Fonokalafi-McMullen, Ana; Weaver, Kiel; Calimlim, Camille
Subject: RE: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

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Ian

Ian Lyle
Republican Legislative Staff
Subcommittee on Water and Power
House Natural Resources Committee
1522 Longworth House Office Building
Washington, DC 20515
202- [REDACTED]

[Website](#) | [Facebook](#) | [Twitter](#) | [YouTube](#)

From: Sheila Greene

Sent: Monday, April 4, 2011 10:07 AM

To: 'Weaver, Kiel'; 'Jason Peltier'; 'Ara Azhderian'; 'Bernhardt, David L.'

Subject: RE: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

Hi all,

1. You can reference the NMFS Southwest Science Center report to the Pacific Fisheries Management Council in which Steve Lindley, NMFS scientist, concluded the primary reason for the decline of the fall run was poor ocean conditions in 2005 and 2006 (Lindley, et al, 2009). Also you can reference MacFarland 2008; his report concluded salmonids all up and down the coast suffered.
2. It is accurate that our exports were pretty low in 2008. But exports were about the same during the VAMP period which is the 4-6 week time period that the fish agency biologists select as the sensitive season in the spring for juvenile salmon outmigration. Lindley wrote that report in 2008/2009 therefore his results would not have included the spring 2008 exports. **The short safe answer is the VAMP export reductions in 2008 were similar to 2007 and 2006.**
3. The claim that 92% of the smolts die because they are lost in the river or pulled into the Central Delta when the pumps are operating at maximum capacity doesn't mean the pumps caused that 92% mortality. Most of the mortality occurs in the main stem Sacramento River (MacFarland 2010 Powerpoint presentation to the Delta Stewardship Council). One of MacFarland's graduate students has a publication on this, but I can't find it at the moment. I will look.
4. Hatchery releases were made downstream of the Delta, but I need to look at release history to see how many have been released from Red Bluff and Feather River. Get back to you soon.
5. The last point below, that the Delta fishes have declined during this time period and they aren't subject to ocean conditions isn't a very good argument. The Delta fishes spend their entire life in the Delta whereas the salmonids migrate through during a pretty good time period, spring. The limiting factors of salmonids and resident Delta fishes may be very different. One would need to show how the limiting factors of each are the same. You could again point to MacFarland who concluded all the salmonids along the coast declined along with the Sacramento Valley Fall Chinook, and those coastal populations aren't subject to exports.

From: Weaver, Kiel [mailto:Kiel.Weaver@mail.house.gov]

Sent: Saturday, April 02, 2011 2:25 PM

To: Jason Peltier; 'Ara Azhderian'; 'Bernhardt, David L.'

Cc: 'Sheila Greene'

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To: Lyle, Ian; rbpool@protroll.com
Cc: Fonokalafi-McMullen, Ana; Weaver, Kiel; Calimlim, Camille
Subject: RE: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

Dear Ian:

This will confirm my participation in the Subcommittee hearing on April 5th. Thank you for the invitation.

I am attaching a copy of my testimony, a PDF attachment that goes with the testimony and the Disclosure Form. If you need anything further, let me know.

Regards,
Dick Pool

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From: Lyle, Ian [<mailto:Ian.Lyle@mail.house.gov>]

Sent: Wednesday, March 30, 2011 2:02 PM

To: 'rbpool@protroll.com'

Cc: Fonokalafi-McMullen, Ana; Weaver, Kiel; Calimlim, Camille


Subject: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

Dear Mr. Poole,

Attached please find an invitation to testify at the Water and Power Subcommittee Oversight Hearing on *"Creating Abundant Water and Power Supplies and Job Growth by Restoring Common Sense to Federal Regulations"*. The hearing is scheduled for Tuesday, April 5, 2011 at 2:00 p.m., in room 1324 Longworth House Office Building. In addition to the invitation you will also find a disclosure form and guidelines regarding your oral and written testimony.

Please confirm receipt of this invitation and do not hesitate to contact us if you have any questions.

Thank you,
Ian

Ian Lyle
Republican Legislative Staff
Subcommittee on Water and Power
House Natural Resources Committee
1522 Longworth House Office Building
Washington, DC 20515
202-

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From: Sheila Greene

Sent: Monday, April 4, 2011 12:05 PM

To: 'Weaver, Kiel'; 'Jason Peltier'; 'Ara Azhderian'; 'Bernhardt, David L.'

Subject: RE: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

Attachments: 2009LindleyFallChinookDecline.pdf; 2008MacFarlaneDeclineSalmonCalifornia2007.doc; 201007MacFarlaneDeltaStewardshipCouncil.pdf

Hi all again, I looked at the hatchery releases in 2006, 07 and 08. See below at #4

1. You can reference the NMFS Southwest Science Center report to the Pacific Fisheries Management Council in which Steve Lindley, NMFS scientist, concluded the primary reason for the decline of the fall run was poor ocean conditions in 2005 and 2006 (Lindley, et al, 2009). Also you can reference MacFarland 2008; his report concluded salmonids all up and down the coast suffered.
2. It is accurate that our exports were pretty low in 2008. But exports were about the same during the VAMP period which is the 4-6 week time period that the fish agency biologists select as the sensitive season in the spring for juvenile salmon outmigration. Lindley wrote that report in 2008/2009 therefore his results would not have included the spring 2008 exports. **The short safe answer is the VAMP export reductions in 2008 were similar to 2007 and 2006.**
3. The claim that 92% of the smolts die because they are list in the river or pulled into the Central Delta when the pumps are operating at maximum capacity doesn't mean the pumps caused that 92% mortality. Most of the mortality occurs in the main stem Sacramento River (MacFarland 2010 Powerpoint presentation to the Delta StewardShip Council). One of MacFarland's graduate students has a publication on this, but I can't find it at the moment. I will look.
4. It is accurate that more Sacramento hatchery Fall Chinook were released in the Bay in 2008 than the two previous years. About 5 million were released in the bay in 2008, 1.1 million in 2007 and 1.5 million in 2006. In addition, more Sacramento hatchery Fall Chinook fish were released into the entire system in 2008. About 8.5 million in 2008, 5.5 million in 2007 and 3 million in 2006. The return index in 2010 was 153,000, in 2009 was 41,000 and in 2008 was 69,500. It would be hard to determine whether the increase in total hatchery release or the hatchery release in the bay was more or less correlated to the return index. I would do a more detailed analysis and determine the return index of the hatchery releases upstream compared to downstream to try to evaluate whether releasing into the bay was correlated to a higher return index. Does this make sense? **The short safe answer is it would be hard to determine if increased total hatchery releases was more important than increased hatchery releases into the bay.**
5. The last point below, that the Delta fishes have declined during this time period and they aren't subject to ocean conditions isn't a very good argument. The Delta fishes spend their entire life in the Delta whereas the salmonids migrate through during a pretty good time period, spring. The limiting factors of salmonids and resident Delta fishes may be very different. One would need to show how the limiting factors of each are the same. You could again point to MacFarland who concluded all the salmonids along the coast declined along with the Sacramento Valley Fall Chinook, and those coastal populations aren't subject to exports.

Most answers aren't as clean cut as one would like. There are more considerations, important ones, that need to be taken into account.

From: Weaver, Kiel [mailto:Kiel.Weaver@mail.house.gov]

Sent: Saturday, April 02, 2011 2:25 PM

To: Jason Peltier; 'Ara Azhderian'; 'Bernhardt, David L.'

Cc: 'Sheila Greene'

Subject: RE: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

In particular, i would like to refute the following from his testimony:

The primary reason for the fall run crash was the policies of the government which allowed unlimited pumping of water from the Delta between 2000 and 2007. In the spring of each year, in excess of 30 million tiny salmon smolts migrate down the Sacramento River and through the Delta on their way to the ocean. Studies show that when the pumps run at maximum, up to 92% of these smolts are either lost in the river or are pulled into the central Delta where there is no foliage cover and there is no food. The result is that the smolts perish.

If you look at the fall run chart again, you'll see that in 2010 the trend was finally reversed and the run size increased. There are two factors that appear to be the primary reasons for this increase. In the spring of 2008, the Federal Court ruled that the biological opinion which was in place did not protect the salmon from extinction. Based on the scientific evidence, the court curtailed the spring 2008 pumping rate which cut the smolt mortality in the Delta. The result, three years later, was that the mature adults came back in increased numbers in the fall of 2010. Another factor which helped the 2010 recovery was trucking hatchery smolts around the Delta. In the spring of 2008, approximately 13 million hatchery smolts were trucked around the Delta to San Pablo Bay thereby avoiding the destruction by the Delta pumping. These two factors minimized the damage by the pumps. The improved 2010 returns show the results.

There are some who say the decline of salmon was caused by poor ocean conditions but this is contradicted by the fact that native delta fish, which never venture to the ocean, declined precipitously at the same time the pumps were ramped up and the salmon declined. In other words, the ocean conditions theory doesn't explain the loss of fish like the delta smelt that don't live in the ocean.

From: Jason Peltier [jpeltier@westlandswater.org]
Sent: Friday, April 01, 2011 4:44 PM
To: Weaver, Kiel; 'Ara Azhderian'; 'Bernhardt, David L.'
Cc: 'Sheila Greene'
Subject: RE: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

Thanks Kiel. I passed this on to Sheila Greene, our super smart fisheries biologist. She may have suggested questions for you and I would suggest she "respond all" with any input. Thanks.

From: Weaver, Kiel [mailto:Kiel.Weaver@mail.house.gov]
Sent: Friday, April 01, 2011 11:52 AM
To: 'Jason Peltier'; 'Ara Azhderian'; 'Bernhardt, David L.'
Subject: FW: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

Have at it. [Let me know if there are some good questions for him...](#)

From: Dick Pool [mailto:██████████@██████████.██████████]
Sent: Friday, April 01, 2011 2:48 PM
To: Lyle, Ian; rbpool@protroll.com
Cc: Fonokalafi-McMullen, Ana; Weaver, Kiel; Calimlim, Camille
Subject: RE: Invitation to testify at the House of Representatives Subcommittee On Water and Power Hearing on 4.5.11

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Dick Pool

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Thank you,
Ian

Ian Lyle
Republican Legislative Staff
Subcommittee on Water and Power
House Natural Resources Committee
1522 Longworth House Office Building
Washington, DC 20515
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What caused the Sacramento River fall Chinook stock collapse?

S. T. Lindley, C. B. Grimes, M. S. Mohr, W. Peterson, J. Stein, J. T. Anderson, L. W. Botsford, , D. L. Bottom, C. A. Busack, T. K. Collier, J. Ferguson, J. C. Garza, A. M. Grover, D. G. Hankin, R. G. Kope, P. W. Lawson, A. Low, R. B. MacFarlane, K. Moore, M. Palmer-Zwahlen, F. B. Schwing, J. Smith, C. Tracy, R. Webb, B. K. Wells, T. H. Williams

Pre-publication report to the Pacific Fishery Management Council

March 18, 2009

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1 Executive summary

In April 2008, in response to the sudden collapse of Sacramento River fall Chinook salmon (SRFC) and the poor status of many west coast coho salmon populations, the Pacific Fishery Management Council (PFMC) adopted the most restrictive salmon fisheries in the history of the west coast of the U.S. The regulations included a complete closure of commercial and recreational Chinook salmon fisheries south of Cape Falcon, Oregon. Spawning escapement of SRFC in 2007 is estimated to have been 88,000, well below the PFMC's escapement conservation goal of 122,000-180,000 for the first time since the early 1990s. The situation was even more dire in 2008, when 66,000 spawners are estimated to have returned to natural areas and hatcheries. For the SRFC stock, which is an aggregate of hatchery and natural production, many factors have been suggested as potential causes of the poor escapements, including freshwater withdrawals (including pumping of water from the Sacramento-San Joaquin delta), unusual hatchery events, pollution, elimination of net-pen acclimatization facilities coincident with one of the two failed brood years, and large-scale bridge construction during the smolt outmigration (CDFG, 2008). In this report we review possible causes for the decline in SRFC for which reliable data were available.

Our investigation was guided by a conceptual model of the life history of fall Chinook salmon in the wild and in the hatchery. Our approach was to identify where and when in the life cycle abundance became anomalously low, and where and when poor environmental conditions occurred due to natural or human-induced causes. The likely cause of the SRFC collapse lies at the intersection of an unusually large drop in abundance and poor environmental conditions. Using this framework, all of the evidence that we could find points to ocean conditions as being the proximate cause of the poor performance of the 2004 and 2005 broods of SRFC. We recognize, however, that the rapid and likely temporary deterioration in ocean conditions is acting on top of a long-term, steady degradation of the freshwater and estuarine environment.

The evidence pointed to ocean conditions as the proximate cause because conditions in freshwater were not unusual, and a measure of abundance at the entrance to the estuary showed that, up until that point, these broods were at or near normal levels of abundance. At some time and place between this point and recruitment to the fishery at age two, unusually large fractions of these broods perished. A broad body of evidence suggests that anomalous conditions in the coastal ocean in 2005 and 2006 resulted in unusually poor survival of the 2004 and 2005 broods of SRFC. Both broods entered the ocean during periods of weak upwelling, warm sea surface temperatures, and low densities of prey items. Individuals from the 2004 brood sampled in the Gulf of the Farallones were in poor physical condition, indicating that feeding conditions were poor in the spring of 2005 (unfortunately, comparable data do not exist for the 2005 brood). Pelagic seabirds in this region with diets similar to juvenile Chinook salmon also experienced very poor reproduction in these years. In addition, the cessation of net-pen acclimatization in the estuary in 2006 may have contributed to the especially poor estuarine and marine survival of the

45 2005 brood.

46 Fishery management also played a role in the low escapement of 2007. The
47 PFMC (2007) forecast an escapement of 265,000 SRFC adults in 2007 based on
48 the escapement of 14,500 Central Valley Chinook salmon jacks in 2006. The real-
49 ized escapement of SRFC adults was 87,900. The large discrepancy between the
50 forecast and realized abundance was due to a bias in the forecast model that has
51 since been corrected. Had the pre-season ocean abundance forecast been more ac-
52 curate and fishing opportunity further constrained by management regulation, the
53 SRFC escapement goal could have been met in 2007. Thus, fishery management,
54 while not the cause of the 2004 brood weak year-class strength, contributed to the
55 failure to achieve the SRFC escapement goal in 2007.

56 The long-standing and ongoing degradation of freshwater and estuarine habitats
57 and the subsequent heavy reliance on hatchery production were also likely contrib-
58 utors to the collapse of the stock. Degradation and simplification of freshwater
59 and estuary habitats over a century and a half of development have changed the
60 Central Valley Chinook salmon complex from a highly diverse collection of nu-
61 merous wild populations to one dominated by fall Chinook salmon from four large
62 hatcheries. Naturally-spawning populations of fall Chinook salmon are now ge-
63 netically homogeneous in the Central Valley, and their population dynamics have
64 been synchronous over the past few decades. In contrast, some remnant populations
65 of late-fall, winter and spring Chinook salmon have not been as strongly affected
66 by recent changes in ocean conditions, illustrating that life-history diversity can
67 buffer environmental variation. The situation is analogous to managing a financial
68 portfolio: a well-diversified portfolio will be buffeted less by fluctuating market
69 conditions than one concentrated on just a few stocks; the SRFC seems to be quite
70 concentrated indeed.

71 Climate variability plays an important role in the inter-annual variation in abun-
72 dance of Pacific salmon, including SRFC. We have observed a trend of increasing
73 variability over the past several decades in climate indices related to salmon sur-
74 vival. This is a coast-wide pattern, but may be particularly important in California,
75 where salmon are near the southern end of their range. These more extreme climate
76 fluctuations put additional strain on salmon populations that are at low abundance
77 and have little life-history or habitat diversity. If the trend of increasing climate
78 variability continues, then we can expect to see more extreme variation in the abun-
79 dance of SRFC and salmon stocks coast wide.

80 In conclusion, the development of the Sacramento-San Joaquin watershed has
81 greatly simplified and truncated the once-diverse habitats that historically supported
82 a highly diverse assemblage of populations. The life history diversity of this histor-
83 ical assemblage would have buffered the overall abundance of Chinook salmon in
84 the Central Valley under varying climate conditions. We are now left with a fish-
85 ery that is supported largely by four hatcheries that produce mostly fall Chinook
86 salmon. Because the survival of fall Chinook salmon hatchery release groups is
87 highly correlated among nearby hatcheries, and highly variable among years, we
88 can expect to see more booms and busts in this fishery in the future in response
89 to variation in the ocean environment. Simply increasing the production of fall

90 Chinook salmon from hatcheries as they are currently operated may aggravate this
91 situation by further concentrating production in time and space. Rather, the key to
92 reducing variation in production is increasing the diversity of SRFC.

93 There are few direct actions available to the PFMC to improve this situation,
94 but there are actions the PFMC can support that would lead to increased diversity
95 of SRFC and increased stability. Mid-term solutions include continued advocacy
96 for more fish-friendly water management and the examination of hatchery prac-
97 tices to improve the survival of hatchery releases while reducing adverse interac-
98 tions with natural fish. In the longer-term, increased habitat quantity, quality, and
99 diversity, and modified hatchery practices could allow life history diversity to in-
100 crease in SRFC. Increased diversity in SRFC life histories should lead to increased
101 stability and resilience in a dynamic, changing environment. Using an ecosystem-
102 based management and ecological risk assessment framework to engage the many
103 agencies and stakeholder groups with interests in the ecosystems supporting SRFC
104 would aid implementation of these solutions.

2 Introduction

In April 2008 the Pacific Fishery Management Council (PFMC) adopted the most restrictive salmon fisheries in the history of the west coast of the U.S., in response to the sudden collapse of Sacramento River fall Chinook (SRFC) salmon and the poor status of many west coast coho salmon populations. The PFMC adopted a complete closure of commercial and recreational Chinook fisheries south of Cape Falcon, Oregon, allowing only for a mark-selective hatchery coho recreational fishery of 9,000 fish from Cape Falcon, Oregon, to the Oregon/California border. Salmon fisheries off California and Oregon have historically been robust, with seasons spanning May through October and catches averaging over 800,000 Chinook per year from 2000 to 2005. The negative economic impact of the closure was so drastic that west coast Governors asked for \$290 million in disaster relief, and the U.S. Congress appropriated \$170 million.

Escapement of several west coast Chinook and coho salmon stocks was lower than expected in 2007 (PFMC, 2009), and low jack escapement in 2007 for some stocks suggested that 2008 would be at least as bad (PFMC, 2008). The most prominent example is SRFC salmon, for which spawning escapement in 2007 is estimated to have been 88,000, well below the escapement conservation goal of the PFMC (122,000–180,000 fish) for the first time since the early 1990s (Fig. 1). While the 2007 escapement represents a continuing decline since the recent peak escapement of 725,000 spawners in 2002, average escapement since 1983 has been about 248,000. The previous record low escapement, observed in 1992, is believed to have been due to a combination of drought conditions, overfishing, and poor ocean conditions (SRFCRT, 1994). Although conditions have been wetter than average over the 2000–2005 period, the spawning escapement of jacks in 2007 was the lowest on record, significantly lower than the 2006 jack escapement (the second lowest on record), and the preseason projection of 2008 adult spawner escapement was only 59,000¹ despite the complete closure of coastal and freshwater Chinook fisheries.

Low escapement has also been documented for coastal coho salmon during this same time frame. For California, coho salmon escapement in 2007 averaged 27% of parent stock abundance in 2004, with a range from 0% (Redwood Creek) to 68% (Shasta River). In Oregon, spawner estimates for the Oregon Coast natural (OCN) coho salmon were 30% of parental spawner abundance. These returns are the lowest since 1999, and are near the low abundances of the 1990s. Columbia River coho and Chinook stocks experienced mixed escapement in 2007 and 2008.

For coho salmon in 2007 there was a clear north-south gradient, with escapement improving to the north. California and Oregon coastal escapement was down sharply, while Columbia River hatchery coho were down only slightly (PFMC, 2009). Washington coastal coho escapement was similar to 2006. Even within the OCN region, there was a clear north-south pattern, with the north coast region (predominantly Nehalem River and Tillamook Bay populations) returning at 46%

¹Preliminary postseason estimate for 2008 SRFC adult escapement is 66,000.

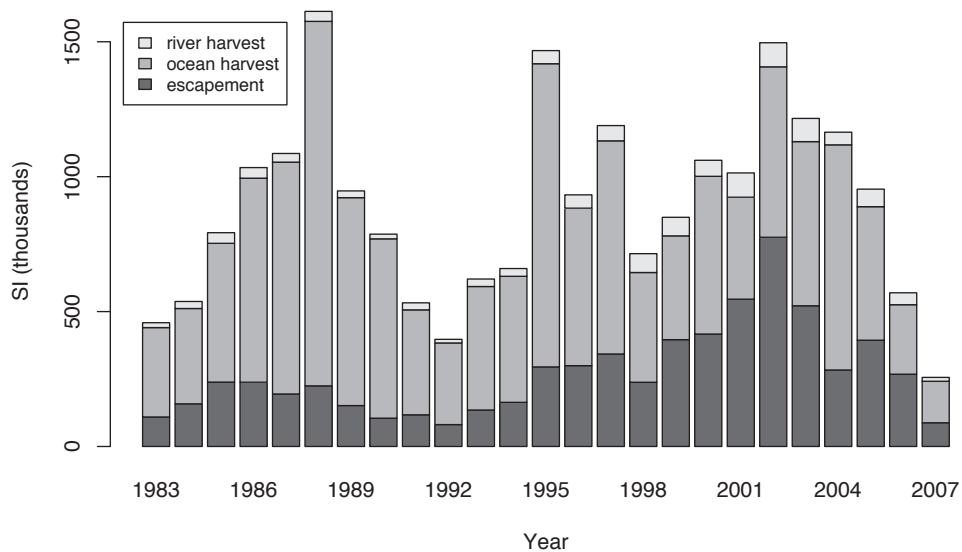


Figure 1: Sacramento River fall Chinook escapement, ocean harvest, and river harvest, 1983–2007. The sum of these components is the Sacramento Index (SI). From O'Farrell et al. (2009).

of parental abundance while the mid-south coast region (predominantly Coos and Coquille populations) returned at only 14% of parental abundance. The Rogue River population was only 21% of parental abundance. Low 2007 jack escapement for these three stocks in particular suggests a continued low abundance in 2008. In addition, Columbia River coho salmon jack escapement in 2007 was also near record lows.

There have been exceptions to these patterns of decline. Klamath River fall Chinook experienced a very strong 2004 brood, despite parent spawners being well below the estimated level necessary for maximum production. Columbia River spring Chinook production from the 2004 and 2005 broods will be at historically high levels, according to age-class escapement to date. The 2008 forecasts for Columbia River fall Chinook “tule” stocks are significantly more optimistic than for 2007. Curiously, Sacramento River late-fall Chinook escapement has declined only modestly since 2002, while the SRFC in the same river basin fell to record low levels.

What caused the observed general pattern of low salmon escapement? For the SRFC stock, which is an aggregate of hatchery and natural production (but probably dominated by hatchery production (Barnett-Johnson et al., 2007)), freshwater withdrawals (including pumping of water from the Sacramento-San Joaquin Delta), unusual hatchery events, pollution, elimination of net-pen acclimatization facilities coincident with one of the two failed brood years, and large-scale bridge construction during the smolt outmigration along with many other possibilities have been suggested as prime candidates causing the poor escapement (CDFG, 2008).

When investigating the possible causes for the decline of SRFC, we need to recognize that salmon exhibit complex life histories, with potential influences on their survival at a variety of life stages in freshwater, estuarine and marine habitats. Thus, salmon typically have high variation in adult escapement, which may be explained by a variety of anthropogenic and natural environmental factors. Also, environmental change affects salmon in different ways at different time scales. In the short term, the dynamics of salmon populations reflect the effects of environmental variation, e.g., high freshwater flows during the outmigration period might increase juvenile survival and enhance recruitment to the fishery. On longer time scales, the cumulative effects of habitat degradation constrain the diversity and capacity of habitats, extirpating some populations and reducing the diversity and productivity of surviving populations (Bottom et al., 2005b). This problem is especially acute in the Sacramento-San Joaquin basin, where the effects of land and water development have extirpated many populations of spring-, winter- and late-fall-run Chinook and reduced the diversity and productivity of fall Chinook populations (Myers et al., 1998; Good et al., 2005; Lindley et al., 2007).

Focusing on the recent variation in salmon escapement, the coherence of variations in salmon productivity over broad geographic areas suggests that the patterns are caused by regional environmental variation. This could include such events as widespread drought or floods affecting hydrologic conditions (e.g., river flow and temperature), or regional variation in ocean conditions (e.g., temperature, upwelling, prey and predator abundance). Variations in ocean climate have been in-

creasingly recognized as an important cause of variability in the landings, abundance, and productivity of salmon (e.g, Hare and Francis (1995); Mantua et al. (1997); Beamish et al. (1999); Hobday and Boehlert (2001); Botsford and Lawrence (2002); Mueter et al. (2002); Pyper et al. (2002)). The Pacific Ocean has many modes of variation in sea surface temperature, mixed layer depth, and the strength and position of winds and currents, including the El Niño-Southern Oscillation, the Pacific Decadal Oscillation and the Northern Oscillation. The broad variation in physical conditions creates corresponding variation in the pelagic food webs upon which juvenile salmon depend, which in turn creates similar variation in the population dynamics of salmon across the north Pacific. Because ocean climate is strongly coupled to the atmosphere, ocean climate variation is also related to terrestrial climate variation (especially precipitation). It can therefore be quite difficult to tease apart the roles of terrestrial and ocean climate in driving variation in the survival and productivity of salmon (Lawson et al., 2004).

In this report we review possible causes for the decline in SRFC, limiting our analysis to those potential causes for which there are reliable data to evaluate. First, we analyze the performance of the 2004, 2005 and 2006 broods of SRFC and look for corresponding conditions and events in their freshwater, estuarine and marine environments. Then we discuss the impact of long-term degradation in freshwater and estuarine habitats and the effects of hatchery practices on the biodiversity of Chinook in the Central Valley, and how reduced biodiversity may be making Chinook fisheries more susceptible to variations in ocean and terrestrial climate. We end the report with recommendations for future monitoring, research, and conservation actions. The appendix answers each of the more than 40 questions posed to the committee and provides summaries of most of the data used in the main report (CDFG, 2008).

3 Analysis of recent broods

3.1 Review of the life history of SRFC

Naturally spawning SRFC return to the spawning grounds in the fall and lay their eggs in the low elevation areas of the Sacramento River and its tributaries (Fig. 2). Eggs incubate for a month or more in the fall or winter, and fry emerge and rear throughout the rivers, tributaries and the Delta in the late winter and spring. In May or June, the juveniles are ready for life in the ocean, and migrate into the estuary (Suisun Bay to San Francisco Bay) and on to the Gulf of the Farallones. Emigration from freshwater is complete by the end of June, and juveniles migrate rapidly through the estuary (MacFarlane and Norton, 2002). While information specific to the distribution of SRFC during early ocean residence is mostly lacking, fall Chinook in Oregon and Washington reside very near shore (even within the surf zone) and near their natal river for some time after ocean entry, before moving away from the natal river mouth and further from shore (Brodeur et al., 2004). SRFC are encountered in ocean salmon fisheries in coastal waters mainly between cen-

tral California and northern Oregon (O’Farrell et al., 2009; Weitkamp, In review), with highest abundances around San Francisco. Most SRFC return to freshwater to spawn after two or three years of feeding in the ocean.

A large portion of the SRFC contributing to ocean fisheries is raised in hatcheries (Barnett-Johnson et al., 2007), including Coleman National Fish Hatchery (CNFH) on Battle Creek, Feather River Hatchery (FRH), Nimbus Hatchery on the American River, and the Mokelumne River Hatchery. Hatcheries collect fish that ascend hatchery weirs, breed them, and raise progeny to the smolt stage. The state hatcheries transport >90% of their production to the estuary in trucks, where some smolts usually are acclimatized briefly in net pens and others released directly into the estuary; Coleman National Fish Hatchery (CNFH) usually releases its production directly into Battle Creek.

3.2 Available data

A large number of datasets are potentially relevant to the investigation at hand. These are summarized in Table 1.

3.3 Conceptual approach

The poor landings and escapement of Chinook in 2007 and the record low escapement in 2008 suggests that something unusual happened to the SRFC 2004 and 2005 broods, and more than forty possible causes for the decline were evaluated by the committee. Poor survival of a cohort can result from poor survival at one or more stages in the life cycle. Life cycle stages occur at certain times and places, and an examination of possible causes of poor survival should account for the temporal and spatial distribution of these life stages. It is helpful to consider a conceptual model of a cohort of fall-run Chinook that illustrates how various anthropogenic and natural factors affect the cohort (Fig. 3). The field of candidate causes can be narrowed by looking at where in the life cycle the abundance of the cohort became unusually low, and by looking at which of the causal factors were at unusual levels for these broods. The most likely causes of the decline will be those at unusual levels at a time and place consistent with the unusual change in abundance.

In this report, we trace through the life cycle of each cohort, starting with the parents of the cohort and ending with the return of the adults. Coverage of life stages and possible causes for the decline varies in depth, partly due to differences in the information available and partly to the committee’s belief in the likelihood that particular life stages and causal mechanisms are implicated in the collapse. Each potential factors identified by CDFG (2008) is, however, addressed individually in the Appendix. Before we delve into the details of each cohort, it is worthwhile to list some especially pertinent observations relative to the 2004 and 2005 broods:

- Near-average numbers of fall Chinook juveniles were captured at Chipps Island

Table 1: Summary of data sources used in this report.

Data type	Period	Source
Time series of ocean harvest, river harvest and escapement	1983-2007	PFMC
Coded wire tag recoveries in fisheries and hatcheries	1983-2007	PSMFC
Fishing effort	1983-2007	PSMFC
Bycatch of Chinook in trawl fisheries	1994-2007	NMFS
Hatchery releases and operations	varies	CDFG, USFWS
Catches of juvenile salmon in survey trawls near Chipps Island	1977-2008	USFWS
Recovery of juvenile salmon in fish salvage operations at water export facilities	1997-2007	DWR
Time series of river conditions (discharge, temperature, turbidity) at various points in the basin	1990-2007	USGS, DWR
Time series of hydrosystem operations (diversions and exports)	1955-2007	DWR, USBR
Abundance of striped bass	1990-2007	CDFG
Abundance of pelagic fish in Delta	1993-2007	CDFG
Satellite-based observations of ocean conditions (sea surface temperature, winds, phytoplankton biomass)	various	NOAA, NASA
Observations of estuary conditions (salinity, temperature, Chl, dissolved O ₂)	1990-2007	USGS
Zooplankton abundance in the estuary	1990-2007	W. Kimmerer, SFSU
Ship-based observations of physical and biological conditions in the ocean (abundance of salmon prey items, mixed layer depth)	1983-2007	NOAA
Ocean winds and upwelling	1967-2008	NMFS
Abundance of marine mammals	varies	NMFS
Abundance of groundfish	1970-2005	NMFS
Abundance of salmon prey items	1983-2005	NMFS
Condition factor of juvenile Chinook in estuary and coastal ocean	1998-2005	NOAA
Seabird nesting success	1971-2005	PRBO

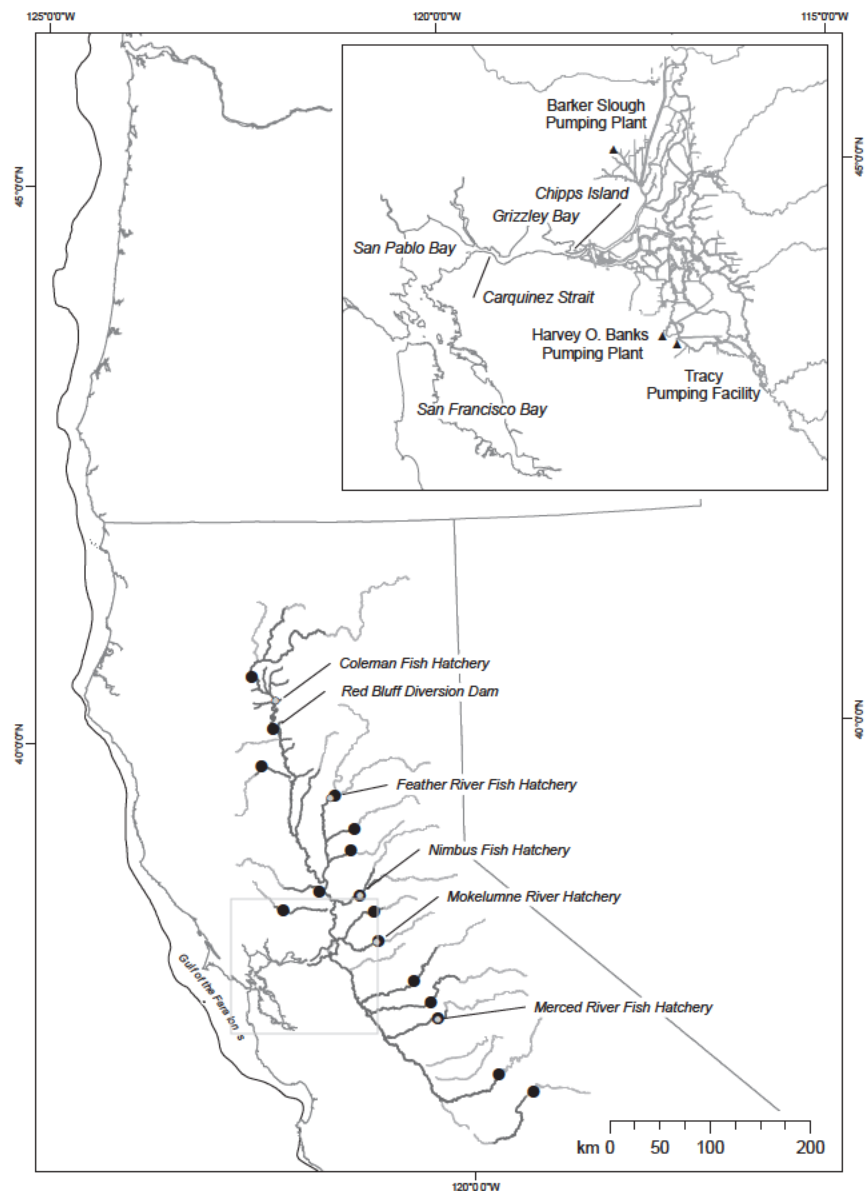


Figure 2: Map of the Sacramento River basin and adjacent coastal ocean. Inset shows the Delta and bays. Black dots denote the location of impassable dams; black triangle denote the location of major water export facilities in the Delta. The contour line indicates approximately the edge of the continental shelf.

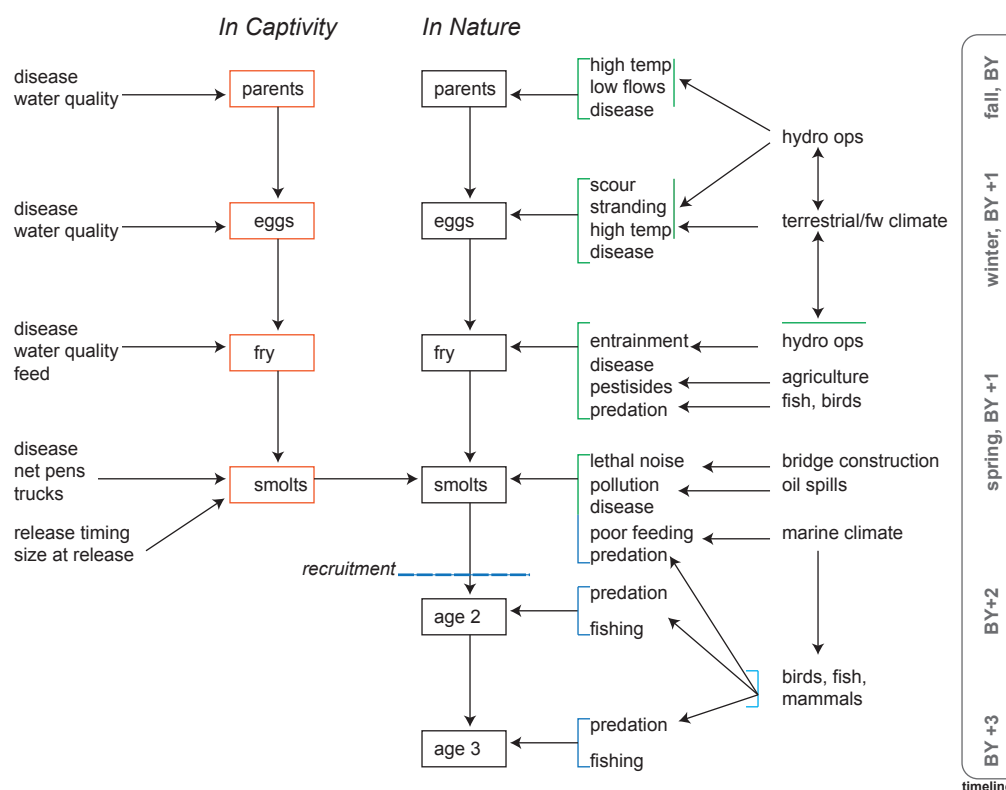


Figure 3: Conceptual model of a cohort of fall-run Chinook and the factors affecting its survival. Orange boxes represent life stages in the hatchery, and black boxes represent life stages in the wild.

- 272 • Near-average numbers of SRFC smolts were released from state and federal
273 hatcheries
- 274 • Hydrologic conditions in the river and estuary were not unusual during the
275 juvenile rearing and outmigration periods (in particular, drought conditions
276 were not in effect)
- 277 • Although water exports reaches record levels in 2005 and 2006, these lev-
278 els were not reached until June and July, a period of time which followed
279 outmigration of the vast majority of fall Chinook salmon smolts from the
280 Sacramento system
- 281 • Survival of Feather River fall Chinook from release into the estuary to re-
282 cruitment to fisheries at age two was extremely poor
- 283 • Physical and biological conditions in the ocean appeared to be unusually poor
284 for juvenile Chinook in the spring of 2005 and 2006
- 285 • Returns of Chinook and coho salmon to many other basins in California,
286 Oregon and Washington were also low in 2007 and 2008.

287 From these facts, we infer that unfavorable conditions during the early marine
288 life of the 2004 and 2005 broods is likely the cause of the stock collapse. Fresh-
289 water factors do not appear to be implicated directly because of the near average
290 abundance of smolts at Chipps Island and because tagged fish released into the es-
291 tuary had low survival to age two. Marine factors are further implicated by poor
292 returns of coho and Chinook in other west coast river basins and numerous obser-
293 vations of anomalous conditions in the California Current ecosystem, especially
294 nesting failure of seabirds that have a diet and distribution similar to that of juvenile
295 salmon.

296 In the remainder of this section, we follow each brood through its lifecycle,
297 bringing relatively more detail to the assessment of ocean conditions during the
298 early marine phase of the broods. While we are confident that ocean conditions are
299 the proximate cause of the poor performance of the 2004 and 2005 broods, human
300 activities in the freshwater environment have played an important role in creating a
301 stock that is vulnerable to episodic crashes; we develop this argument in section 4.

302 **3.4 Brood year 2004**

303 **3.4.1 Parents**

304 The possible influences on the 2004 brood of fall-run Chinook began in 2004, with
305 the maturation, upstream migration and spawning of the brood's parents. Most sig-
306 nificantly, 203,000 adult fall Chinook returned to spawn in the Sacramento River
307 and its tributaries in 2004, slightly more than the 1970-2007 mean of 195,000; es-
308 capement to the Sacramento basin hatcheries totaled 80,000 adults (PFMC, 2009).
309 In September and October of 2004, water temperatures were elevated by about

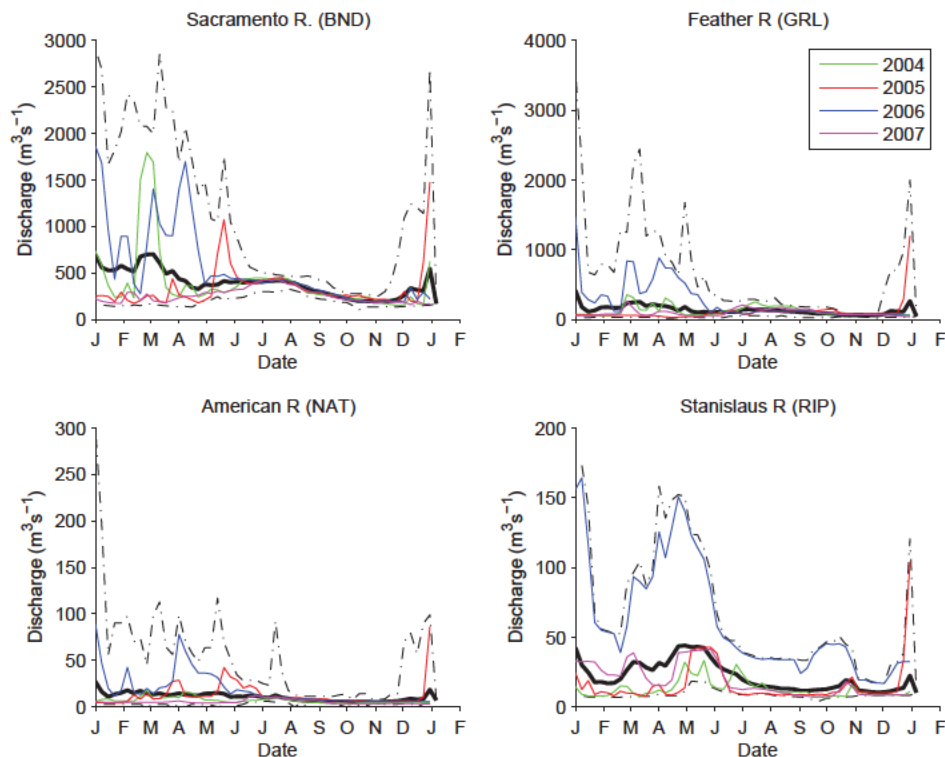


Figure 4: Discharge in regulated reaches of the Sacramento River, Feather River, American River and Stanislaus River in 2004-2007. Heavy black line is the weekly average discharge over the period of record for the stream gage (indicated in parentheses in the plot titles); dashed black lines indicate weekly maximum and minimum discharges. Data from the California Data Exchange Center, <http://cdec.water.ca.gov>.

1°C above average at Red Bluff, but remained below 15.5°C. Temperatures inhibiting the migration of adult Chinook are significantly higher than this (McCullough, 1999). Flows were near normal through the fall and early winter (Fig. 4). Escapement to the hatcheries was near record highs, and no significant changes to broodstock selection or spawning protocols occurred. Carcass surveys on the Sacramento River showed very low levels of pre-spawning mortality in 2004 (D. Killam, CDFG, unpublished data). It therefore appears that factors influencing the parents of the 2004 brood were not the cause of the poor performance of that brood.

3.4.2 Eggs

The naturally-spawned portion of the 2004 brood spent the egg phase in the gravel from October 2004 through March 2005 (Vogel and Marine, 1991). Water temperatures at Red Bluff were within the optimal range for egg incubation for most of this period, with the exception of early October. Flows were below average throughout the incubation period, but mostly above the minimum flow levels observed for the last 20 years or so. It is therefore unlikely that the eggs suffered scouring flows; we have no information about redd dewatering, although flows below the major dams

are regulated to prevent significant redd dewatering.

In the hatcheries, no unusual events were noted during the incubation of the eggs of the 2004 brood. Chemical treatments of the eggs were not changed for the 2004 brood.

3.4.3 Fry, parr and smolts

As noted above, flows in early 2005 were relatively low until May, when conditions turned wet and flows rose to above-normal levels (Fig. 4). Higher spring flows are associated with higher survival of juvenile salmon (Newman and Rice, 2002). Water temperature at Red Bluff was above the 1990-2007 average for much of the winter and spring, but below temperatures associated with lower survival of juvenile life stages (McCullough, 1999). In 2005, the volume of water pumped from the Delta reached record levels in January before falling to near-average levels in the spring, then rising again to near-record levels in the summer and fall (Fig. 5,top), but only after the migration of fall Chinook smolts was nearly complete (Fig. 8). Water diversions, in terms of the export:inflow ratio (E/I), fluctuated around the average throughout the winter and spring (Fig. 5,bottom). Statistical analysis of coded-wire-tagged releases of Chinook to the Delta have shown that survival declines with increasing exports and increasing E/I at time of release (Kjelson and Brandes, 1989; Newman and Rice, 2002).

Releases of Chinook smolts were at typical levels for the 2004 brood, with a high proportion released into the bay, and of these, a not-unusual portion acclimated in net pens prior to release (Fig. 6). No significant disease outbreaks or other problems with the releases were noted.

Systematic trawl sampling near Chipps Island provides an especially useful dataset for assessing the strength of a brood as it enters the estuary². The USFWS typically conducts twenty-minute mid-water trawls, 10 times per day, 5 days a week. An index of abundance can be formed by dividing the total catch per day by the total volume swept by the trawl gear. Fig. 7 shows the mean annual CPUE from 1976 to 2007; CPUE in 2005 was slightly above average. The timing of catches of juvenile fall Chinook at Chipps Island was not unusual in 2005 (Fig. 8). Had the survival of the 2004 brood been unusually poor in freshwater, catches at Chipps Island should have been much lower than average, since by reaching that location, fish have survived almost all of the freshwater phase of their juvenile life.

There are two reasons, however, that apparently normal catches at Chipps Island could mask negative impacts that occurred in freshwater. One possibility is that catches were normal because the capture efficiency of the trawl was much higher than usual. The capture efficiency of the trawl, as estimated by the recovery rate of coded-wire-tagged Chinook, is variable among years, but the recovery rate of Chinook released at Ryde in 2005 was about average (P. Brandes, USFWS, unpublished data). This suggests that the actual abundance of fall Chinook passing

²Catches at Chipps Island include naturally-produced fish and CNFH hatchery fish released at Battle Creek; almost all fish from the state hatcheries are released downstream of Chipps Island.

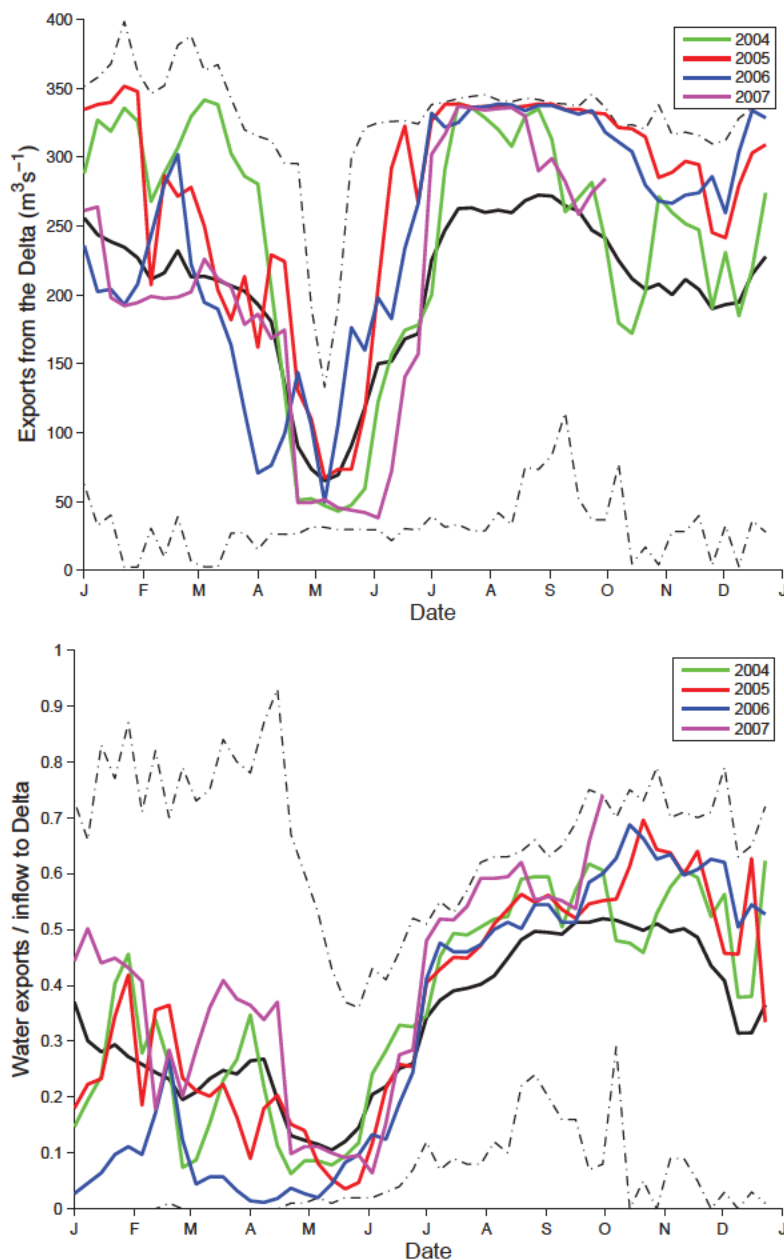


Figure 5: Weekly average export of freshwater from the Delta (upper panel) and the ratio of exports to inflows (bottom panel). Heavy black line is the weekly average discharge over the 1955-2007 period; dashed black lines indicate maximum and minimum weekly average discharges. Exports, as both rate and proportion, were higher than average in all years in the summer and fall, but near average during the spring, when fall Chinook are migrating through the Delta. Flow estimates from the DAYFLOW model (<http://www.iep.ca.gov/dayflow/>).

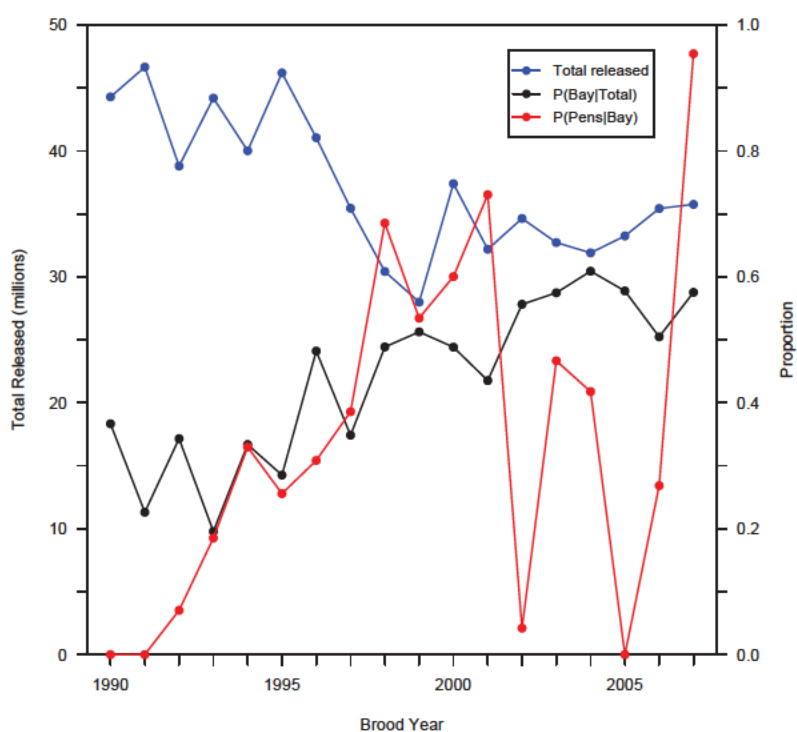


Figure 6: Total releases of hatchery fall Chinook, proportion of releases made to the bay, and the proportion of bay releases acclimatized in net pens. Unpublished data of CDFG and USFWS.

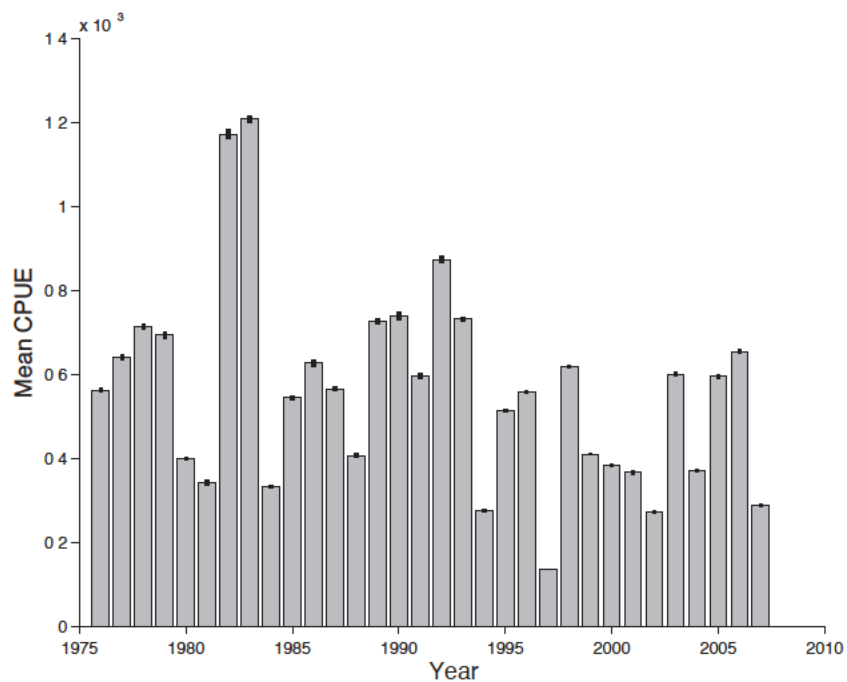


Figure 7: Mean annual catch-per-unit effort of fall Chinook juveniles at Chipps Island by USFWS trawl sampling conducted between January 1 and July 18. Error bars indicate the standard error of the mean. USFWS, unpublished data.

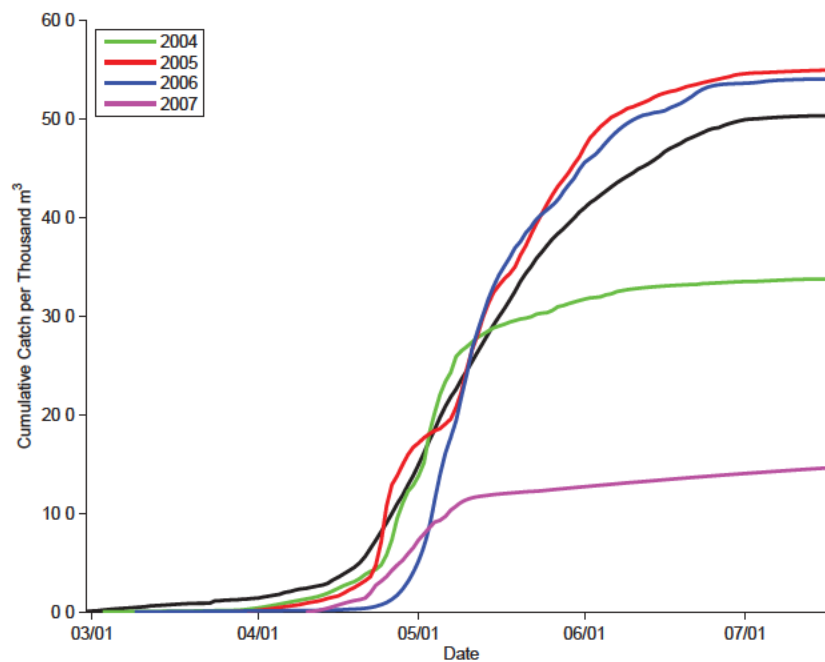


Figure 8: Cumulative daily catch per unit effort (CPUE) of fall Chinook juveniles at Chipps Island by USFWS trawl sampling. Black line shows the mean cumulative CPUE for 1976-2007.

366 Chipps Island was not low. The other explanation is that the effects of freshwa-
 367 ter stressors result in delayed mortality that manifests itself after fish pass Chipps
 368 Island. Delayed mortality from cumulative stress events has been hypothesized to
 369 explain the relatively poor survival to adulthood of fish that successfully pass more
 370 hydropower dams on the Columbia River (Budy et al., 2002). However, there is no
 371 *direct* evidence, to date, for delayed mortality in Chinook from the Columbia River
 372 (ISAB, 2007), and its causes remain a mystery. In any case, we do not have the data
 373 to test this hypothesis for SRFC.

374 3.4.4 Early ocean

375 Taken together, two lines of evidence suggest that something unusual befell the
 376 2004 brood of fall Chinook in either the bay or the coastal ocean. First, near-
 377 average numbers of juveniles were observed at Chipps Island (Fig. 8), and the state
 378 hatcheries released normal numbers of smolts into the bay. Second, survival of FRH
 379 smolts to age two was very low for the 2004 brood, only 8% that of the 2000 brood
 380 (Fig. 9; see the appendix for the rationale and details behind the survival rate index
 381 calculations), and the escapement of jacks from the 2004 brood was also very low in
 382 2006 (Fig. 10). The Sacramento Index of for 2007 was quite close to that expected
 383 by the escapement of jacks in 2006 (see appendix), indicating that the unusual mor-
 384 tality occurred after passing Chipps Island and prior to recruitment to the fishery at
 385 age two. Environmental conditions in the bay were not unusual in 2005 (see ap-
 386 pendix), suggesting that the cause of the collapse was likely in the ocean. Before
 387 reviewing conditions in the ocean, it is helpful to consider a conceptual model of
 388 physical and biological processes that characterize upwelling ecosystems, of which
 389 the California Current is an example.

390 Rykaczewski and Checkley (2008) provides such a model (Fig. 11). Several
 391 factors, operating at different scales, influence the magnitude and distribution of
 392 primary and secondary productivity³ occurring in the box. At the largest scale, the
 393 winds that drive upwelling ecosystems are generated by high-pressure systems cen-
 394 tered far offshore that generate equator-ward winds along the eastern edge of the
 395 ocean basin (Barber and Smith, 1981). The strength and position of pressure sys-
 396 tems over the globe change over time, which is reflected in various climate indices
 397 such as the Southern Oscillation Index and the Northern Oscillation index (Schwing
 398 et al., 2002), and these large-scale phenomena have local effects on the California
 399 Current. One effect is determining the source of the water entering the northern
 400 side of the box in Fig. 11. This source water can come from subtropical waters
 401 (warmer and saltier, with subtropical zooplankton species that are not particularly
 402 rich in lipids) or from subarctic waters (colder and fresher, with subarctic zooplank-
 403 ton species that are rich in lipids) (Hooff and Peterson, 2006). Where the source
 404 water comes from is determined by physical processes acting at the Pacific Ocean
 405 basin scale. The productivity of the source water entering the box is also influenced
 406 by coastal upwelling occurring in areas to the north.

³Primary production is the creation of organic material by phytoplankton; secondary production is the creation of animal biomass by zooplankton.

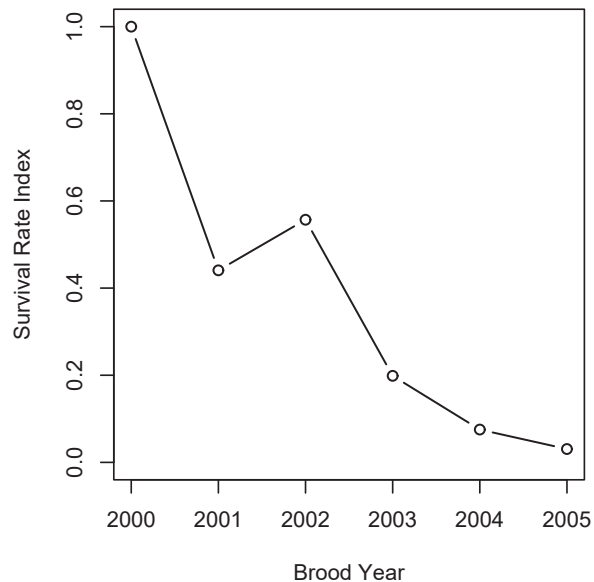


Figure 9: Index of FRH fall Chinook survival rate between release in San Francisco Bay and age two based on coded-wire tag recoveries in the San Francisco major port area recreational fishery; brood years 2000-2005. The survival rate index is recoveries of coded-wire tags expanded for sampling divided by the product of fishing effort and the number of coded-wire tags released, relative to the maximum value observed (brood year 2000).

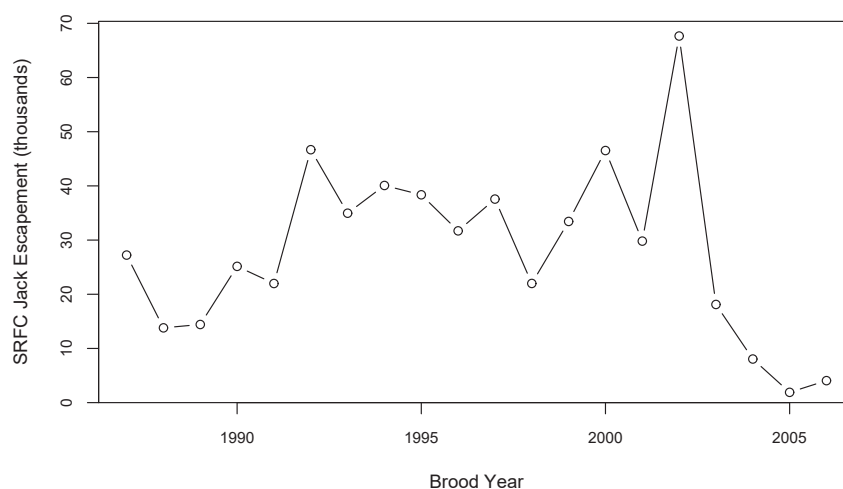


Figure 10: Escapement of SRFC jacks. Escapements in 2006 (brood year 2004) and 2007 (brood year 2005) were record lows at the time. Escapement estimate for 2008 (brood year 2006) is preliminary.

Within the box, productivity also depends on the magnitude, direction, spatial and temporal distribution of the winds (e.g., Wilkerson et al., 2006). Northwest winds drive surface waters away from the shore by a process called Ekman flow, and are replaced from below by colder, nutrient-rich waters near shore through the process of coastal upwelling. Northwest winds typically become stronger as one moves away from shore, a pattern called positive windstress curl, which causes offshore upwelling through a processes called Ekman pumping. The vertical velocities of curl-driven upwelling are generally much smaller than those of coastal upwelling, so nutrients are supplied to the surface waters at a lower rate by Ekman pumping (although potentially over a much larger area). Calculations by Dever et al. (2006) indicate that along central California, coastal upwelling supplies about twice the nutrients to surface waters as curl-driven upwelling. The absolute magnitude of the wind stress also affects mixing of the surface ocean; wind-driven mixing brings nutrients into the surface mixed layer but deepens the mixed layer, potentially limiting primary production by decreasing the average amount of light experienced by phytoplankton.

Yet another factor influencing productivity is the degree of stratification⁴ in the upper ocean. This is partly determined by the source waters—warmer waters increase the stratification, which impedes the effectiveness of wind-driven upwelling and mixing. The balance of all of these processes determines the character of the pelagic food web, and when everything is “just right”, highly productive and short food chains can form and support productive fish populations that are characteristic of coastal upwelling ecosystems (Ryther, 1969; Wilkerson et al., 2006).

It is also helpful to consider how Chinook use the ocean. Juvenile SRFC typically enter the ocean in the springtime, and are thought to reside in near shore waters, in the vicinity of their natal river, for the first few months of their lives in the sea (Fisher et al., 2007). As they grow, they migrate along the coast, remaining over the continental shelf mainly between central California and southern Washington (Weitkamp, In review). Fisheries biologists believe that the time of ocean entry is especially critical to the survival of juvenile salmon, as they are small and thus vulnerable to many predators (Percy, 1992). If feeding conditions are good, growth will be high and starvation or the effects of size-dependent predation may be lower. Thus, we expect conditions at the time of ocean entry and near the point of ocean entry to be especially important in determining the survival of juvenile fall Chinook.

The timing of the onset of upwelling is critical for juvenile salmon that migrate to sea in the spring. If upwelling and the pelagic food web it supports is well-developed when young salmon enter the sea, they can grow rapidly and tend to survive well. If upwelling is not well-developed or if its springtime onset is delayed, growth and survival may be poor. As shown next, most physical and biological measures were quite unusual in the northeast Pacific, and especially in the Gulf of the Farallones, in the spring of 2005, when the 2004 brood of fall Chinook entered the ocean.

⁴Stratification is the layering of water of different density.

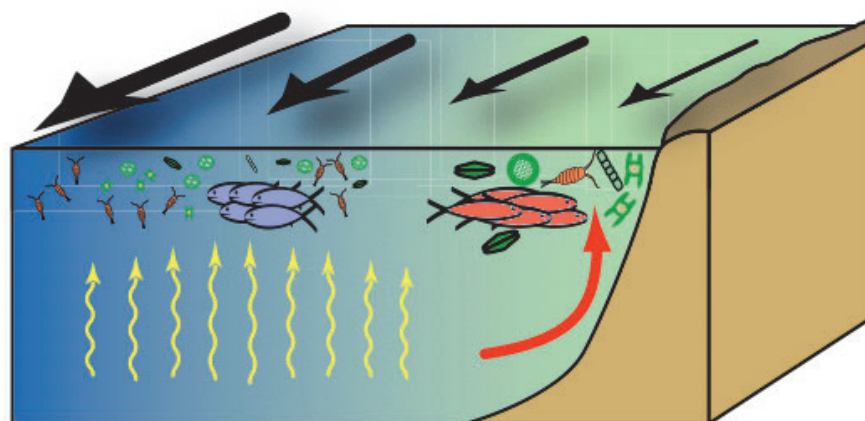


Figure 11: Conceptual diagram displaying the hypothesized relationship between wind-forced upwelling and the pelagic ecosystem. Alongshore, equatorward wind stress results in coastal upwelling (red arrow), supporting production of large phytoplankters and zooplankters. Between the coast and the wind-stress maximums, cyclonic wind-stress curl results in curl-driven upwelling (yellow arrows) and production of smaller plankters. Black arrows represent winds at the ocean surface, and their widths are representative of wind magnitude. Young juvenile salmon, like anchovy (red fish symbols), depend on the food chain supported by large phytoplankters, whereas sardine (blue fish symbols) specialize on small plankters. Growth and survival of juvenile salmon will be highest when coastal upwelling is strong. Redrawn from Rykaczewski and Checkley (2008).

Figure 12 shows temperature and wind anomalies for the north Pacific in the April-June period of 2005-2008. There were southwesterly anomalies in wind speed throughout the California Current in May of 2005, and sea surface temperature (SST) in the California Current was warmer than normal. This indicates that upwelling-inducing winds were abnormally weak in May 2005. By June of 2005, conditions off of California were more normal, with stronger than usual northwesterly winds along the coast.

Because Fig. 12 indicates that conditions were unusual in the spring of 2005 throughout the California Current and also the Gulf of Alaska, we should expect to see wide-spread responses by salmon populations inhabiting these waters at this time. This was indeed the case. Fall Chinook in the Columbia River from brood year 2004 had their lowest escapement since 1990, and coastal fall Chinook from Oregon from brood year 2004 had their lowest escapement since either 1990 or the 1960s, depending on the stock. Coho salmon that entered the ocean in the spring of 2005 also had poor escapement.

Conditions off north-central California further support the hypothesis that ocean conditions were a significant reason for the poor survival of the 2004 brood of fall Chinook salmon. The upper two panels of Fig. 13 show a cumulative upwelling index (CUI; Schwing et al. (2006)), an estimate of the integrated amount of upwelling for the growing season, for the nearshore ocean area where fall Chinook juveniles initially reside (39°N) and the coastal region to the north, or “upstream”

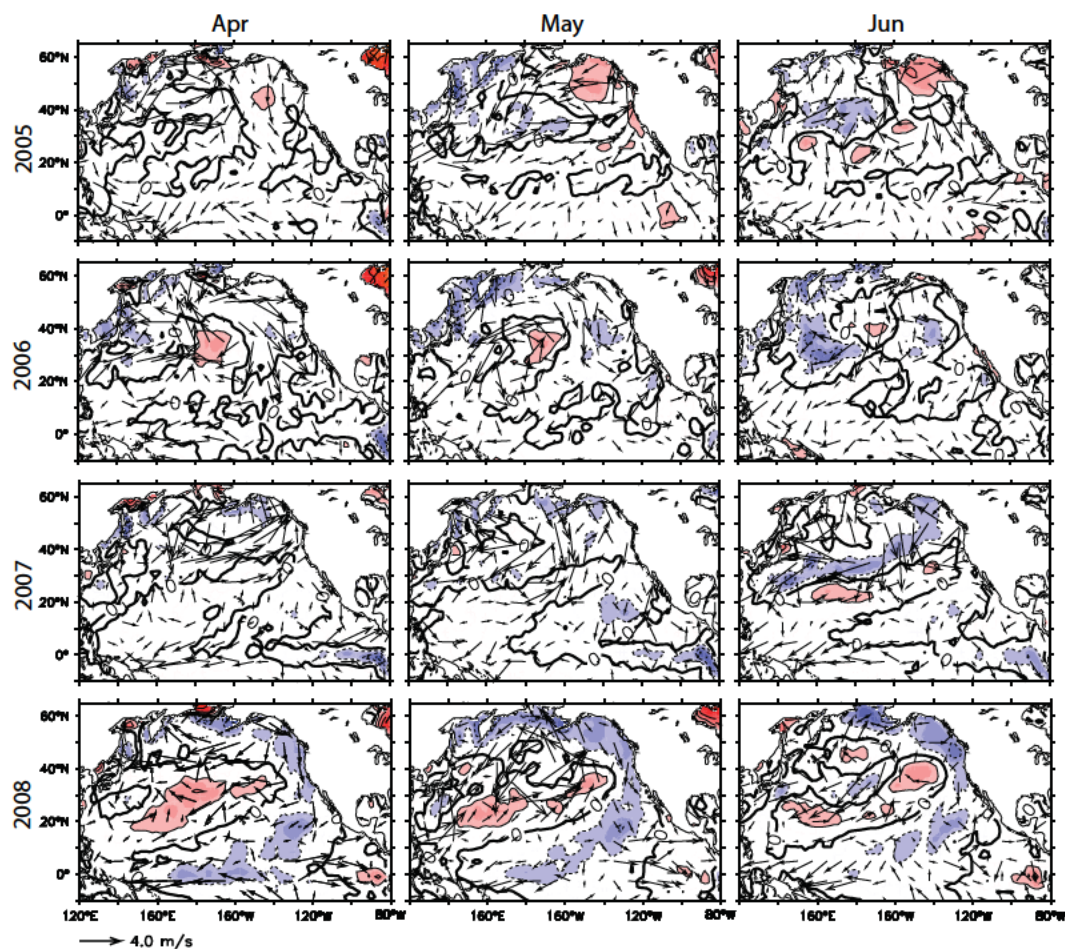


Figure 12: Sea surface temperature (colors) and wind (vectors) anomalies for the north Pacific for April-June in 2005-2008. Red indicates warmer than average SST; blue is cooler than average. Note the southwesterly wind anomalies (upwelling-suppressing) in May 2005 and 2006 off of California, and the large area of warmer-than-normal water off of California in May 2005. Winds and surface temperatures returned to near-normal in 2007, and become cooler than normal in spring 2008 along the west coast of North America.

(42°N). Typically, upwelling-favorable winds are in place by mid-March, as shown by the start dates of the CUI. In 2005, upwelling-favorable winds were unseasonably weak in early spring, and did not become firmly established until late May and June further delayed to the north. The resulting deficit in the CUI (Fig. 13, lower two panels) is thought to have resulted in a delayed spring bloom, reduced biological productivity, and a much smaller forage base for Chinook smolts. The low and delayed upwelling was also expressed as unusually warm sea-surface temperatures in the spring of 2005 (Fig. 14).

The anomalous spring conditions in 2005 and 2006 were also evident in surface trajectories predicted from the OSCURS current simulations model⁵. The model computes the daily movement of water particles in the North Pacific Ocean surface layer from daily sea level pressures (Ingraham and Miyahara, 1988). Lengths and directions of trajectories of particles released near the coast are an indication of the strength of offshore surface movement and upwelling. Fig. 15 shows particle trajectories released from three locations March 1 and tracked to May 1 for 2004, 2005, 2006 and 2007. In 2005 and 2006 trajectories released south of 42°N stayed near coast; a situation suggesting little upwelling over the spring.

The delay in 2005 upwelling to the north of the coastal ocean habitat for these smolts is particularly important, because water initially upwelled off northern California and Oregon advected south, providing the source of primary production that supports the smolts prey base. Transport in spring 2005 (Fig. 15b) supports the contention that the water encountered by smolts emigrating out of SF Bay originated from off northern California, where weak early spring upwelling was particularly notable.

Some of the strongest evidence for the collapse of the pelagic food chain comes from observations of seabird nesting success on the Farallon Islands. Nearly all Cassin's auklets, which have a diet very similar to that of juvenile Chinook, abandoned their nests in 2005 because of poor feeding conditions (Sydeman et al., 2006; Wolf et al., 2009). Other notable observations of the pelagic foodweb in 2005 include: emaciated gray whales (Newell and Cowles, 2006); sea lions foraging far from shore rather than their usual pattern of foraging near shore (Weise et al., 2006); various fishes at record low abundance, including common salmon prey items such as juvenile rockfish and anchovy (Brodeur et al., 2006); and dinoflagellates becoming the dominant phytoplankton group in Monterey Bay, rather than diatoms (MBARI, 2006). While the overall abundance of anchovies was low, they were captured in an unusually large fraction of trawls, indicating that they were more evenly distributed than normal (NMFS unpublished data). The overall abundance of krill observed in trawls in the Gulf of the Farallones was not especially low, but krill were concentrated along the shelf break and sparse inshore.

Observations of size, condition factor (K, a measure of weight per length) and total energy content (kilojoules (kJ) per fish, from protein and lipid contents) of juvenile salmon offer direct support for the hypothesis that feeding conditions in

⁵Live access to OSCURS model, Pacific Fisheries Environmental Laboratory. Available at www.pfeg.noaa.gov/products/las.html. Accessed 26 December 2007.

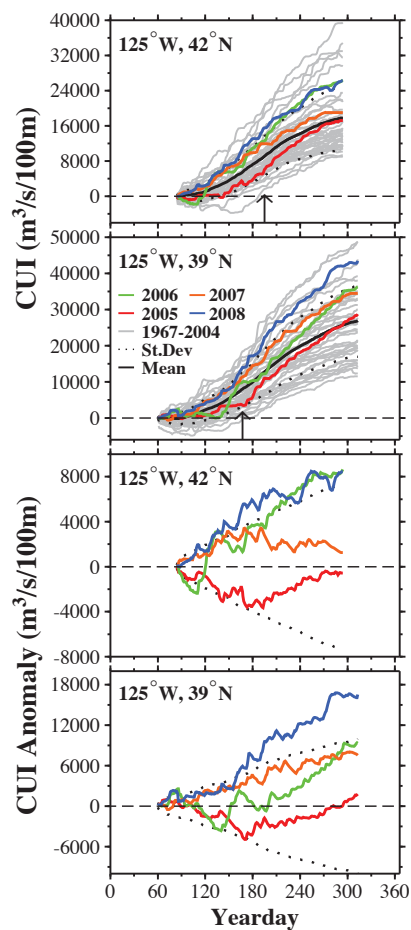


Figure 13: Cumulative upwelling index (CUI) and anomalies of the CUI at 42°N (near Brookings, Oregon) and 39°N (near Pt. Arena, California). Gray lines in the upper two panels are the individual years from 1967-2004. Black line is the average, dashed lines show the standard deviation. Arrow indicates the average time of maximum upwelling rate. The onset of upwelling was delayed in 2005 and remained weak through the summer; in 2006, the onset of upwelling was again delayed but became quite strong in the summer. Upwelling in 2007 and 2008 was stronger than average.

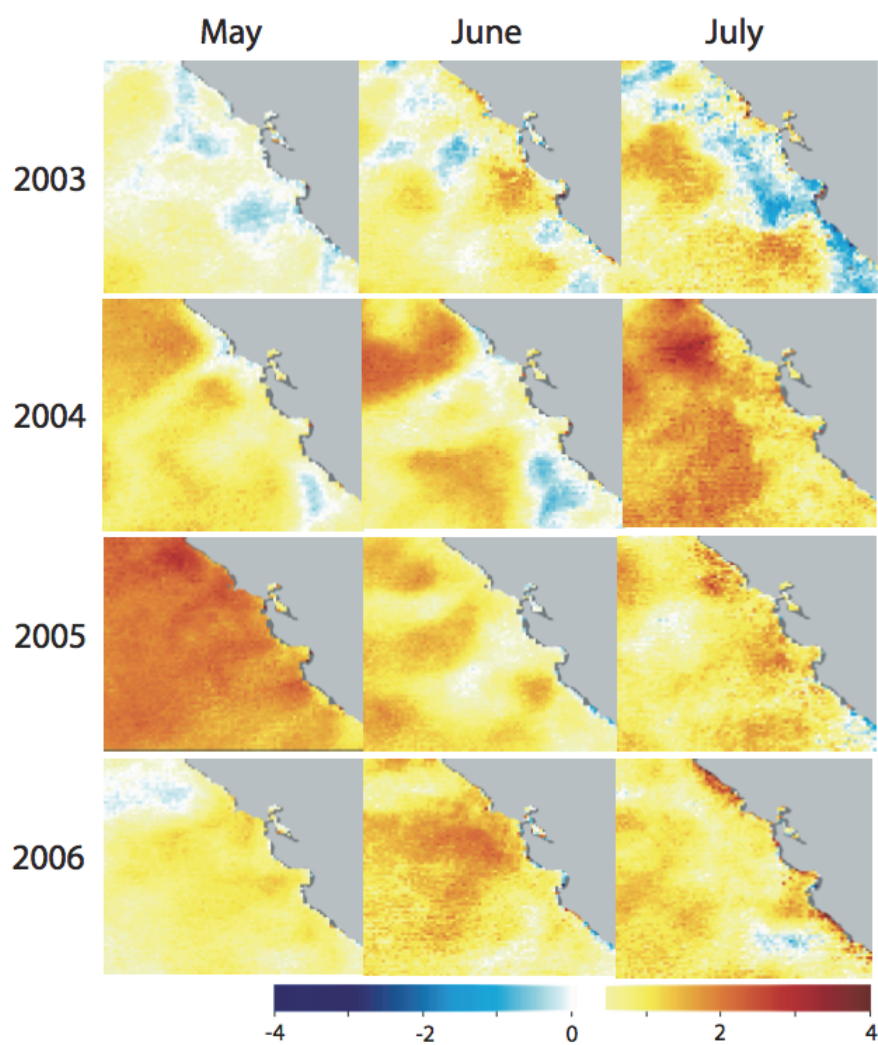


Figure 14: Sea surface temperature anomalies off central California in May-July of 2003-2006.

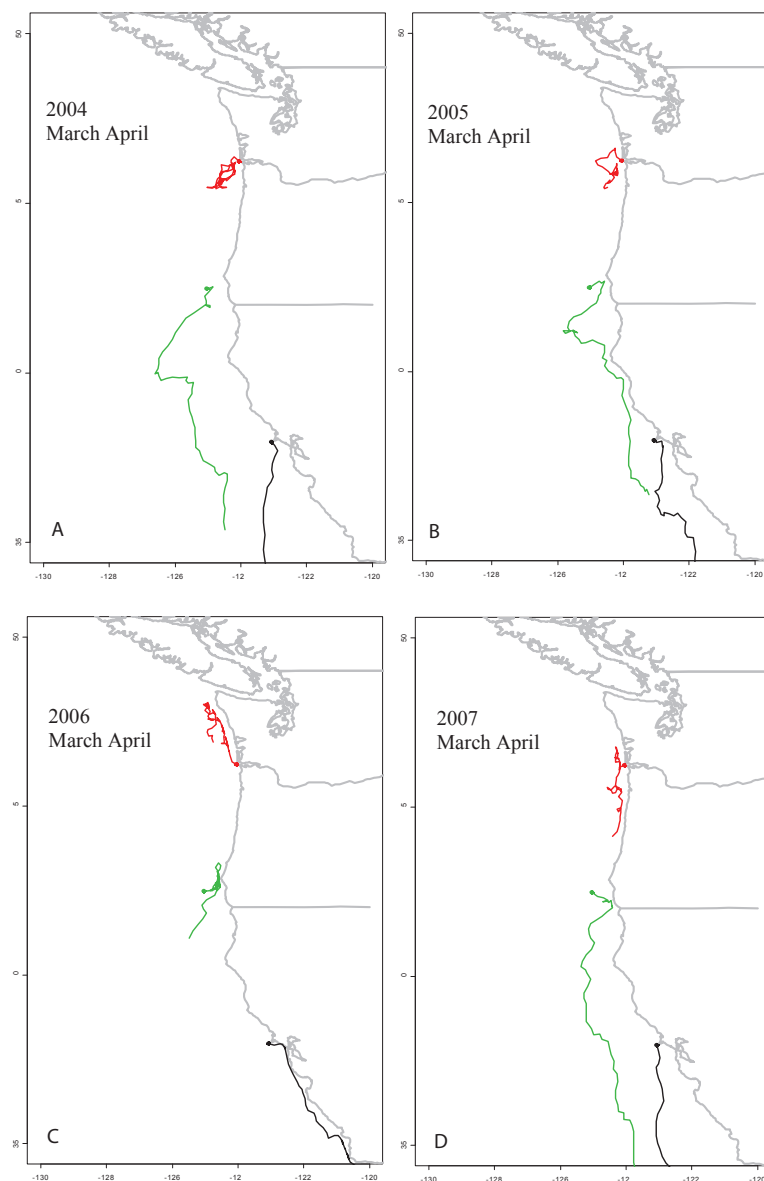


Figure 15: Surface particle trajectories predicted from the OSCURS current model. Particles released at 38°N, 43°N and 46°N (dots) were tracked from March 1 through May 1 (lines) for 2004-2007.

the Gulf of the Farallones were poor for juvenile salmon in the summer of 2005. Variation in feeding conditions for early life stages of marine fishes has been linked to subsequent recruitment variation in previous studies, and it is hypothesized that poor growth leads to low survival (Houde, 1975). In 2005, length, weight, K, and total energy content of juvenile Chinook exiting the estuary during May and June, when the vast majority of fall-run smolts enter the ocean, was similar to other observations made over the 1998-2005 period (Fig. 16). However, size, K, and total energy content in the summer of 2005, after fish had spent approximately one month in the ocean, were all significantly lower than the mean of the 8-year period. These data show that growth and energy accumulation, processes critical to survival during the early ocean phase of juvenile salmon, were impaired in the summer, but recovered to typical values in the fall. A plausible explanation is that poor feeding conditions and depletion of energy reserves in the summer produced low growth and energy content, resulting in higher mortality of juveniles at the lower end of the distribution. By the fall, however, ocean conditions and forage improved and size, K, and total energy content had recovered to typical levels in survivors.

Taken together, these observations of the physical and biological state of the coastal ocean offer a plausible explanation for the poor survival of the 2004 brood. Due to unusual atmospheric and oceanic conditions, especially delayed coastal upwelling, the surface waters off of the central California coast were relatively warm and stratified in the spring, with a shallow mixed layer. Such conditions do not favor the large, colonial diatoms that are normally the base of short, highly productive food chains, but instead support greatly increased abundance of dinoflagellates (MBARI, 2006; Rykaczewski and Checkley, 2008). The dinoflagellate-based food chain was likely longer and therefore less efficient in transferring energy to juvenile salmon, juvenile rockfish and seabirds, which all experienced poor feeding conditions in the spring of 2005. This may have resulted in outright starvation of young salmon, or may have made them unusually vulnerable to predators. Whatever the mechanism, it appears that relatively few of the 2004 brood survived to age two. These patterns and conditions are consistent with Gargett's (1997) "optimal stability window" hypothesis, which posits that salmon stocks do poorly when water column stability is too high (as was the case for the 2004 and 2005 broods) or too low, and with Rykaczewski and Checkley's (2008) explanation of the role of offshore, curl-driven upwelling in structuring the pelagic ecosystem of the California Current. Strong stratification in the Bering Sea was implicated in the poor escapement of sockeye, chum and Chinook populations in southwestern Alaska in 1996-97 (Kruse, 1998).

3.4.5 Later ocean

In the previous section we presented information correlating unusual conditions in the Gulf of the Farallones, driven by unusual conditions throughout the north Pacific in the spring of 2005, that caused poor feeding conditions for juvenile fall Chinook. It is possible that conditions in the ocean at a later time, such as the spring of 2006, may have also contributed to or even caused the poor performance of the

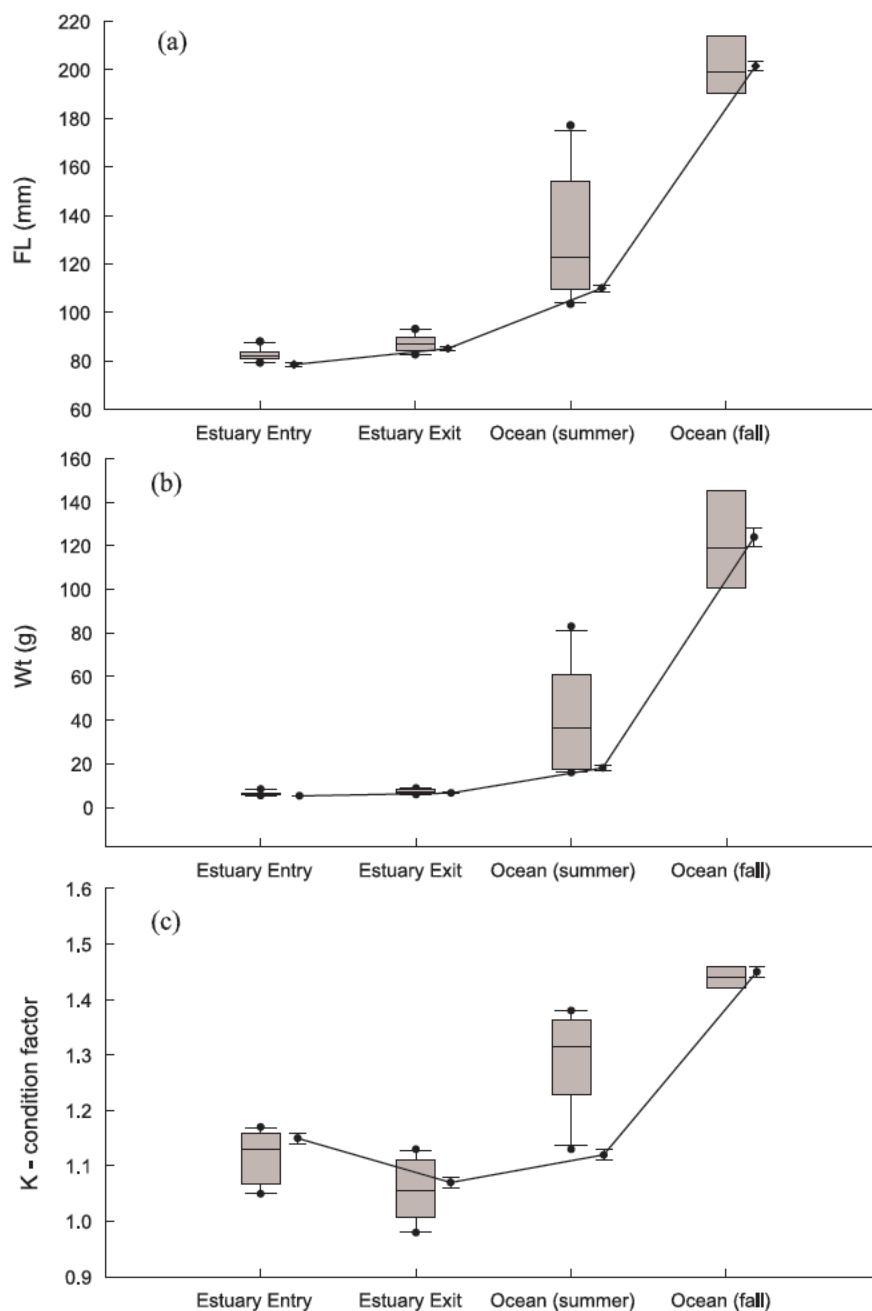


Figure 16: Changes in (a) fork length, (b) weight, and (c) condition (K) of juvenile Chinook salmon during estuarine and early ocean phases of their life cycle. Boxes and whiskers represent the mean, standard deviation and 90% central interval for fish collected in San Francisco Estuary (entry = Suisun Bay, exit = Golden Gate) during May and June and coastal ocean between 1998-2004; points connected by the solid line represent the means (± 1 SE) of fish collected in the same areas in 2005. Unpublished data of B. MacFarlane.

2004 brood. This is because fall Chinook spend at least years at sea before returning to freshwater, and thus low jack escapement could arise due to mortality or delayed maturation caused by conditions during the second year of ocean life. While it is generally believed that conditions during early ocean residency are especially important (Pearcy, 1992), work by Kope and Botsford (1990) and Wells et al. (2008) suggests that ocean conditions can affect all ages of Chinook. As discussed below in section 3.5.4, ocean conditions in 2006 were also unusually poor. It is therefore plausible that mortality of sub-adults in their second year in the ocean may have contributed to the poor escapement of SRFC in 2007.

Fishing is another source of mortality to Chinook that could cause unusually low escapement (discussed in more detail in the appendix). The PFMC (2007) forecasted an escapement of 265,000 SRFC adults in 2007 based on the escapement of 14,500 Central Valley Chinook jacks in 2006. The realized escapement of SRFC adults was 87,900. The error was due mainly to the over-optimistic forecast of the pre-season ocean abundance of SRFC. Had the pre-season ocean abundance forecast been accurate and fishing opportunity further constrained by management regulation in response, so that the resulting ocean harvest rate was reduced by half, the SRFC escapement goal would have been met in 2007. Thus, fishery management, while not the cause of the 2004 brood weak year-class strength, contributed to the failure to achieved the SRFC escapement goal in 2007.

3.4.6 Spawners

Jack returns and survival of FRH fall Chinook to age two indicates that the 2004 brood was already at very low abundance before they began to migrate back to freshwater in the fall 2007. Water temperature at Red Bluff was within roughly 1°C of normal in the fall, and flows were substantially below normal in the last 5 weeks of the year. We do not believe that these conditions would have prevented fall Chinook from migrating to the spawning grounds, and there is no evidence of significant mortalities of fall Chinook in the river downstream of the spawning grounds.

3.4.7 Conclusions for the 2004 brood

All of the evidence that we could find points to ocean conditions as being the proximate cause of the poor performance of the 2004 brood of fall Chinook. In particular, delayed coastal upwelling in the spring of 2005 meant that animals that time their reproduction so that their offspring can take advantage of normally bountiful food resources in the spring, found famine rather than feast. Similarly, marine mammals and birds (and juvenile salmon) which migrate to the coastal waters of northern California in spring and summer, expecting to find high numbers of energetically-rich zooplankton and small pelagic fish upon which to feed, were also impacted. Another factor in the reproductive failure and poor survival of fishes and seabirds may have been that 2005 marked the third year of chronic warm conditions in the northern California Current, a situation which could have led to a general reduction

597 in health of fish and birds, rendering them less tolerant of adverse ocean conditions.

598 **3.5 Brood year 2005**

599 **3.5.1 Parents**

600 In 2005, 211,000 adult fall Chinook returned to spawn in the Sacramento River
601 and its tributaries to give rise to the 2005 brood, almost exactly equal to the 1970-
602 2007 mean (Fig. 1). Pre-spawning mortality in the Sacramento River was about
603 1% of the run (D. Killam, CDFG, unpublished data). River flows were near normal
604 through the fall, but rose significantly in the last weeks of the year. Escapement to
605 Sacramento basin hatcheries was near record highs, but this did not result in any
606 significant problems in handling the broodstock.

607 **3.5.2 Eggs**

608 Flows in the winter of 2005-2006 were higher than usual, with peak flows around
609 the new year and into the early spring on regulated reaches throughout the basin.
610 Flows generally did not reach levels unprecedented in the last two decades (Fig. 4;
611 see appendix for more details), but may have resulted in stream bed movement
612 and subsequent mortality of a portion of the fall Chinook eggs and pre-emergent
613 fry. Water temperature at Red Bluff in the spring was substantially lower than
614 normal, probably prolonging the egg incubation phase, but not so low as to cause
615 egg mortality (McCullough, 1999).

616 **3.5.3 Fry, parr and smolts**

617 The spring of 2006 was unusually wet, due to late-season rains associated with a
618 cut-off low off the coast of California and a ridge of high pressure running over
619 north America from the southwest to the northeast. This weather pattern gener-
620 ated high flows in March and April 2006 (Fig. 4) and a very low ratio of water
621 exports to inflows to the Delta (Fig. 5). Water temperatures in San Francisco Bay
622 were unusually low, and freshwater outflow to the bay was unusually high (see ap-
623 pendix). These conditions, while anomalous, are not expected to cause low survival
624 of smolts migrating through the bay to the ocean. It is conceivable that the wet
625 spring conditions had a delayed and indirect negative effect on the 2005 brood. For
626 example, surface runoff could have carried high amounts of contaminants (pesti-
627 cide residues, metals, hydrocarbons) into the rivers or bay, and these contaminants
628 could have caused health problems for the brood that resulted in death after they
629 passed Chipps Island. However, since both the winter and spring had high flows
630 the concentrations of pollutants would likely have been at low levels if present. We
631 found no evidence for or against this hypothesis.

632 Total water exports at the state and federal pumping facilities in the south Delta
633 were near average in the winter and spring, but the ratio of water exports to inflow to
634 the Delta (E/I) was lower than average for most of the winter and spring, only rising

to above-average levels in June. Total exports were near record levels throughout the summer and fall of 2006, after the fall Chinook emigration period.

Catch-per-unit-effort of juvenile fall Chinook in the Chipps Island trawl sampling was slightly higher than average in 2006, and the timing of catches was very similar to the average pattern, with perhaps a slight delay (roughly one week) in migration timing.

Releases from the state hatcheries were at typical levels, although in a potentially significant change in procedure, fish were released directly into Carquinez Strait and San Pablo Bay without the usual brief period of acclimatization in net pens at the release site. This change in procedure was made due to budget constraints at CDFG. Acclimatization in net pens has been found to increase survival of release groups by a factor of 2.6, (CDFG, unpublished data) so this change may have had a significant impact on the survival of the state hatchery releases. CNFH released near-average numbers of smolts into the upper river, with no unusual problems noted.

Conditions in the estuary and bays were cooler and wetter in the spring of 2006 than is typical. Such conditions are unlikely to be detrimental to the survival of juvenile fall Chinook.

3.5.4 Early ocean

Overall, conditions in the ocean in 2006 were similar to those in 2005. At the north Pacific scale, northwesterly winds were stronger than usual far offshore in the northeast Pacific during the spring, but weaker than normal near shore (Fig. 12). The seasonal onset of upwelling was again delayed in 2006, but this anomaly was more distinct off central California (Fig. 13). Unlike 2005, however, nearshore transport in 2006 was especially weak (Fig. 15b). In contrast to 2005, conditions unfavorable for juvenile salmon were restricted to central California, rather than being a coast-wide phenomenon (illustrated in Fig. 13, where upwelling was delayed later at 39°N than 42°N). Consequently, we should expect to see corresponding latitudinal variation in biological responses in 2006.

These relatively poor conditions, following on the extremely poor conditions in 2005, had a dramatic effect on the food base for juvenile salmon off central CA. Once again, Cassin's auklets on the Farallon Islands experienced near-total reproductive failure. Krill, which were fairly abundant but distributed offshore near the continental shelf break in 2005, were quite sparse off central California in 2006 (see appendix). Juvenile rockfish were at very low abundance off central California, according to the NMFS trawl surveys (see appendix). These observations indicate feeding conditions for juvenile salmon in the spring of 2006 off central California were as bad as or worse than in 2005.

Consistent with the alongshore differences in upwelling and SST anomalies, and with better conditions off of Oregon and Washington, abundance of juvenile spring Chinook, fall Chinook and coho were four to five times higher in 2006 than in 2005 off of Oregon and Washington (W. Peterson, NMFS, unpublished data from trawl surveys). Catches of juvenile spring Chinook and coho salmon in June 2005 were

the lowest of the 11 year time series; catches of fall Chinook were the third lowest. Similarly, escapement of adult fall Chinook to the Columbia River in 2007 for the fish that entered the sea in 2005 was the lowest since 1993 but escapement in 2008 was twice as high as in 2007. A similar pattern was seen for Columbia River spring Chinook. Cassin's auklets on Triangle Island, British Columbia, which suffered reproductive failure in 2005, fared well in 2006 (Wolf et al., 2009).

Estimated survival from release to age two for the 2005 brood of FRH fall Chinook was 60% lower than the 2004 brood, only 3% of that observed for the 2000 brood (Fig. 9). We note that the failure to acclimatize the bay releases in net pens may explain the difference in survival of the 2004 and 2005 Feather River releases, but would not have affected survival of naturally produced or CNFH smolts. Jack escapement from the 2005 brood in 2007 was extremely low. Unfortunately, lipid and condition factor sampling of juvenile Chinook in the estuary, bays and Gulf of the Farallones was not conducted in 2006 due to budgetary and ship-time constraints.

3.5.5 Later ocean

Ocean conditions improved in 2007 and 2008, with some cooling in the spring in the California Current in 2007, and substantial cooling in 2008. Data are not yet available on the distribution and abundance of salmon prey items, but it is likely that feeding conditions improved for salmon maturing in 2008. However, improved feeding conditions appear to have had minimal benefit to survival after recruitment to the fishery, because the escapement of 66,000 adults in 2008 was very close to the predicted escapement (59,000) based on jack returns in 2007. Fisheries were not a factor in 2008 (they were closed).

3.5.6 Spawners

As mentioned above, about 66,000 SRFC adults returned to natural areas and hatcheries in 2008. Although detailed data have not yet been assembled on freshwater and estuarine conditions for the fall of 2008, the Sacramento Valley has been experiencing severe drought conditions, and river temperatures were higher than normal and flows have been lower than normal. Neither of these conditions are beneficial to fall Chinook and may have impacted the reproductive success of the survivors of the 2005 brood.

3.5.7 Conclusions for the 2005 brood

For the 2005 brood, the evidence suggests again that ocean conditions were the proximate cause of the poor performance of that brood. In particular, the cessation of coastal upwelling in May of 2006 was likely a serious problem for juvenile fall Chinook entering the ocean in the spring. In contrast to 2005, anomalously poor ocean conditions were restricted to central California. The poorer performance of

the 2005 brood relative to the 2004 brood may be partly due to the cessation of net-pen acclimatization of fish from the state hatcheries.

3.6 Prospects for brood year 2006

In this section, we briefly comment on some early indicators of the possible performance of the 2006 brood. The abundance of adult fall Chinook escaping to the Sacramento River, its tributaries and hatcheries in 2006 had dropped to 168,000, a level still above the minimum escapement goal of 122,000. Water year 2007 (which started in October 2006) was categorized as “critical”⁶, meaning that drought conditions were in effect during the freshwater phase of the 2006 brood. While the levels of water exports from the Delta were near normal, inflows were below normal, and for much of the winter, early spring, summer and fall of 2007, the E/I ratio was above average. During the late spring, when fall Chinook are expected to be migrating through the Delta, the E/I ratio was near average. Ominously, catches of fall Chinook juveniles in the Chipps Island trawl survey in 2007 were about half that observed in 2005 and 2006. A tagging study conducted by NMFS and UC Davis found that survival of late-fall Chinook from release in Battle Creek (upper Sacramento River near CNFH) to the Golden Gate was roughly 3% in 2007; such survival rates are much lower than have been observed in similar studies in the Columbia River (Williams et al., 2001; Welch et al., 2008).

Ocean conditions began to improve somewhat in 2007, with some cooling evident in the Gulf of Alaska and the eastern equatorial Pacific. The California Current was roughly 1°C cooler than normal in April and May, but then warmed to above-normal levels in June-August 2007. The preliminary estimate of SRFC jack escapement was 4,060 (Fig. 10, PFMC (2009)), double that of the 2005 brood, but still the second lowest on record and a level that predicts an adult escapement in 2009 at the low end of the escapement goal absent any fishing in 2009. A survival rate estimate from release to age two is not possible for this brood due to the absence of a fishery in 2008, but jack returns will provide some indication of the survival of this brood⁷.

3.7 Is climate change a factor?

An open question is whether the recent unusual conditions in the coastal ocean are the result of normal variation or caused in some part by climate change. We tend to think of the effects of climate change as a trajectory of slow, steady warming. Another potential effect is an increased intensity and frequency of many types of rare events (Christensen et al., 2007). Along with a general upward trend in sea surface temperatures, the variability of ocean conditions as indexed by the Pacific Decadal Oscillation, the North Pacific Gyre Oscillation, and the NINO34 index appears to be increasing (N. Mantua, U. Washington, unpublished data).

⁶California Department of Water Resources water year hydrological classification indices, <http://cdec.water.ca.gov/cgi-progs/iodir2/WSIHIST>

⁷Proper cohort reconstructions are hindered because of inadequate sampling of tagged fish in the hatchery and on the spawning grounds, and high rates of straying.

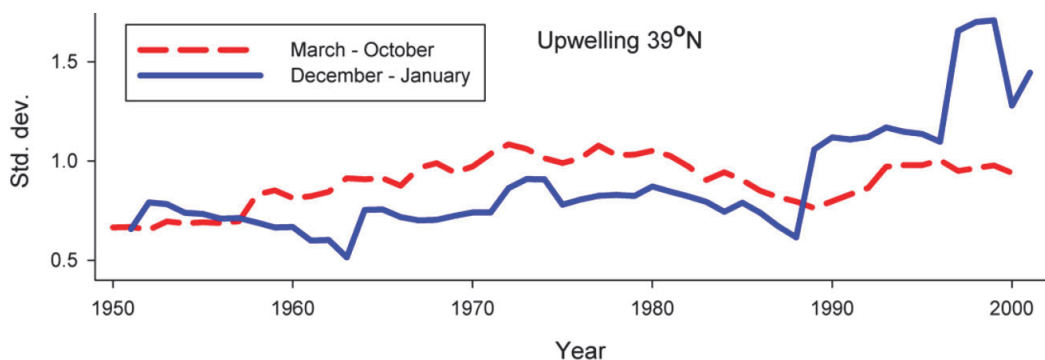


Figure 17: Changes in interannual variation in summer and winter upwelling at 39°N latitude, 1946 - 2007. Summer upwelling shows a possible decadal-scale oscillation. Winter upwelling (downwelling) shows a sharp increase starting in the late 1980s. The graph shows 11-year moving average standard deviations of standardized time series.

Winter upwelling at 39°N, off the California coast, took a jump upward in the late 1980s (Fig. 17). Whether there is a direct causative relationship between this pattern and recent volatility in SRFC escapement is a matter for further investigation, but there is a similar pattern of variability in environmental indices and salmon catch and escapement coast wide. While not evident in all stocks (Sacramento River winter Chinook escapement variability is going down, for example) the general trend for salmon stocks from California to Alaska is one of increasing variability (Lawson and Mantua, unpublished data). The well-recognized relationship between salmon survival and ocean conditions suggests that the variability in SRFC escapement is at least partly linked to the variability in ocean environment.

In the Sacramento River system there are other factors leading to increased variability in salmon escapements, including variation in harvest rates, freshwater habitat simplification, and reduced life history diversity in salmon stocks (discussed in detail in the section 4). In addition, freshwater temperature and flow patterns are subject to the same forces that drive variability in the ocean environment (Lawson et al., 2004), although they are modified significantly in the Central Valley by the water projects. These factors, in combination with swings in ocean survival, would tend to increase the likelihood of extreme events such as the unusually high escapements of the early 2000s and the recent low escapements that are the subject of this report.

3.8 Summary

A broad body of evidence suggests that anomalous conditions in the coastal ocean in 2005 and 2006 resulted in unusually poor survival of the 2004 and 2005 broods of SRFC. Both broods entered the ocean during periods of weak upwelling, warm sea surface temperatures, and low densities of prey items. Pelagic seabirds with diets similar to juvenile Chinook also experienced very poor reproduction in these years. A dominant role for freshwater factors as proximate causes of poor survival for the 2004 and 2005 broods were ruled out by observations of near-normal fresh-

water conditions during the period of freshwater residency, near-normal numbers of juvenile fall-run Chinook entering the estuary, and typical numbers of juvenile fall Chinook released from hatcheries. However, as Lawson (1993) reasoned, long-term declines in the condition of freshwater habitats are expected to result in increasingly severe downturns in abundance during episodes of poor ocean survival (Fig. 18). In the following section, we explain how human activities may be making the Central Valley Chinook salmon stock complex more susceptible to natural stressors.

4 The role of anthropogenic impacts

So far, we have restricted our analysis to the question of whether there were unusual conditions affecting Sacramento River fall-run Chinook from the 2004 and 2005 broods that could explain their poor performance, reaching the conclusion that unfavorable ocean conditions were the proximate cause. But what about the ultimate causes?

4.1 Sacramento River fall Chinook

With regard to SRFC, anthropogenic effects are likely to have played a significant role in making this stock susceptible to collapse during periods of unfavorable ocean conditions. Historical modifications have eliminated salmon spawning and rearing habitat, decreased total salmon abundance, and simplified salmon biodiversity (McEvoy, 1986; Yoshiyama et al., 1998, 2001; Williams, 2006a). To the extent that these changes have concentrated fish production and reduced the capacity of populations to spread mortality risks in time and space, we hypothesize that the Central Valley salmon ecosystem has become more vulnerable to recurring stresses, including but not limited to periodic shifts in the ocean environment.

Modifications in the Sacramento River basin since early in the nineteenth century have reduced the quantity, quality, and spatial distribution of freshwater habitat for Chinook. Large dams have blocked access to spawning habitat upriver and disrupted geomorphic processes that maintain spawning and rearing habitats downstream. Levees have disconnected flood plains, and bank armoring and dewatering of some river reaches have eliminated salmon access to shallow, peripheral habitats. By one estimate at least 1700 km or 48% of the stream lengths available to salmon for spawning, holding, and migration (not including the Delta) have been lost from the 3500 km formerly available in the Central Valley (Yoshiyama et al., 2001).

One of the most obvious alterations to fall Chinook habitat has been the loss of shallow-water rearing habitat in the Delta. Mid-nineteenth century land surveys suggest that levee construction and agricultural conversion have removed all but about 5% of the 1,300 km² of Delta tidal wetlands (Williams, 2006a). Because growth rates in shallow-water habitats can be very high in the Central Valley (Sommer et al., 2001; Jeffres et al., 2008), access to shallow wetlands, floodplains and stream channel habitats could increase the productive capacity of the system. From this perspective, the biggest problem with the state and federal water projects is not

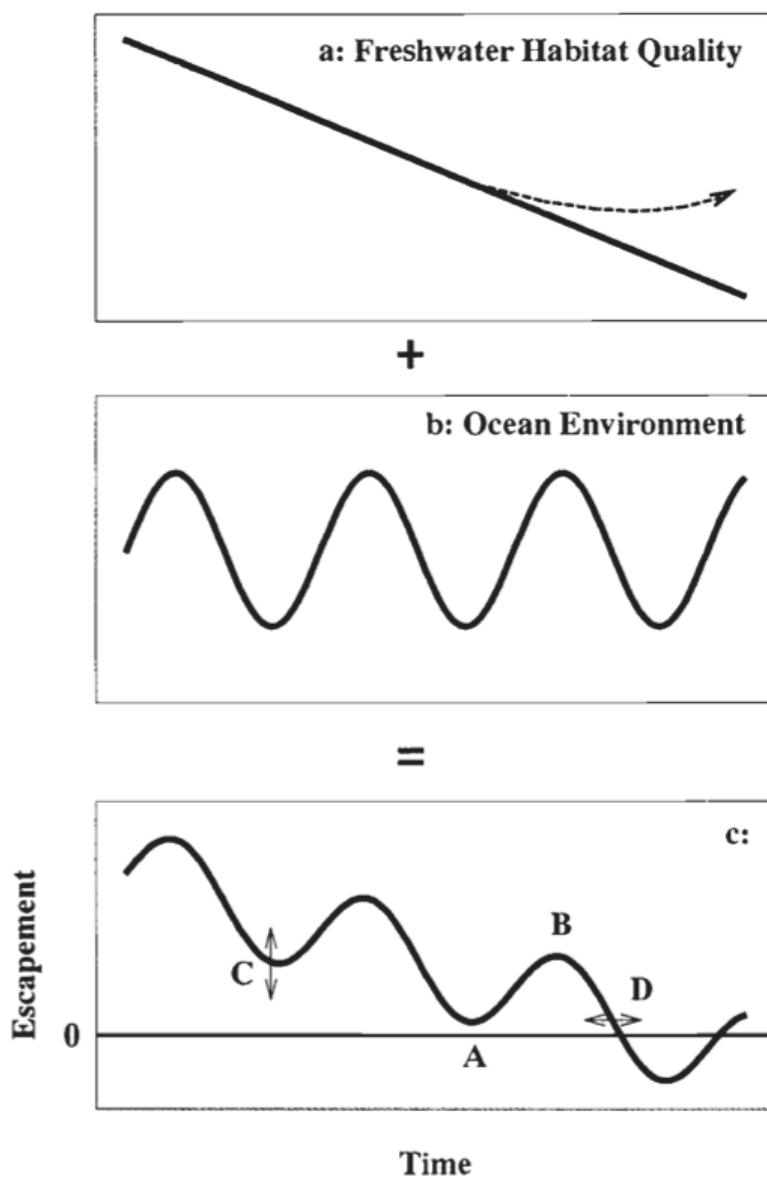


Figure 18: Conceptual model of effects of declining habitat quality and cyclic changes in ocean productivity on the abundance of salmon. a: trajectory over time of habitat quality. Dotted line represents possible effects of habitat restoration projects. b: generalized time series of ocean productivity. c: sum of top two panels where letters represent the following: A = current situation, B = situation in the future, C = change in escapement from increasing or decreasing harvest, and D = change in time of extinction from increasing or decreasing harvest. Copied from Lawson (1993).

that they kill fish at the pumping facilities, but that by engineering the whole system to deliver water from the north of the state to the south while preventing flooding, salmon habitat has been greatly simplified.

Although historical habitat losses undoubtedly have reduced salmon production in the Central Valley ecosystem, other than commercial harvest records, quantitative abundance estimates did not become available until the 1940s, nearly a century after hydraulic gold mining, dam construction, and other changes had drastically modified the habitat landscape. Harvest records indicate that high volumes of fish were harvested by nineteenth-century commercial river fisheries. From the 1870s through early 1900s, annual in-river harvest in the Central Valley often totaled four to ten million pounds of Chinook, approaching or exceeding the total annual harvest by statewide ocean fisheries in recent decades (Yoshiyama et al., 1998). Maximum annual stock size (including harvest) of Central Valley Chinook salmon before the twentieth century has been estimated conservatively at 1-2 million spawners with fall-run salmon totals perhaps reaching 900,000 fish (Yoshiyama et al., 1998). In recent decades, annual escapement of SRFC, which typically accounts for more than 90% of all fall Chinook production in the Central Valley, has remained relatively stable, totaling between 100,000 and 350,000 adults in most years from the 1960s through the 1990s. However, escapement began to fluctuate more erratically in the present decade, climbing to a peak of 775,000 in 2002 but then falling rapidly to near-record lows thereafter (Fig. 1).

Beyond the effects of human activities on production of SRFC are the less obvious influences on biodiversity. The diversity of life histories in Chinook (variations in size and age at migration, duration of freshwater and estuarine residency, time of ocean entry, etc.) has been described as a strategy for spreading mortality risks in uncertain environments (Healey, 1991). Diverse habitat types allow the expression of diverse salmon rearing and migration behaviors (Bottom et al., 2005b), and life history diversity within salmon stocks allows the stock aggregate to be more resilient to environmental changes (Hilborn et al., 2003).

Juvenile SRFC have adopted a variety of rearing strategies that maximize use of the diverse habitat types throughout the basin, including: (1) fry (< 50 mm fork length) migrants that leave soon after emergence to rear in the Delta or in the estuarine bays; (2) fingerling migrants that remain near freshwater spawning areas for several months, leaving at larger sizes (> 60 mm fork length) in the spring but passing quickly through the Delta; and (3) later migrants, including some juveniles that reside in natal streams through the summer or even stay through the winter to migrate as yearlings (Williams, 2006a). Today most SRFC exhibit fry-migrant strategies, while the few yearling migrants occur in areas where reservoir releases maintain unusually low water temperatures. Historical changes reduced or eliminated habitats that supported diverse salmon life histories throughout the basin. Passage barriers blocked access to cool upper basin tributaries, and irrigation diversions reduced flows and increased water temperatures, eliminating cool-water refugia necessary to support juveniles with stream-rearing life histories (Williams, 2006a). The loss of floodplain and tidal wetlands in the Delta eliminated a considerable amount of habitat for fry migrants, a life history strategy that is not very

effective in the absence of shallow-water habitats downstream of spawning areas. Similar fresh water and estuarine habitat losses have been implicated in the simplification of Chinook life histories in the Salmon (Bottom et al., 2005a) and Columbia River basins (Bottom et al., 2005b; Williams, 2006b). In Oregon's Salmon River, an extensive estuarine wetland restoration program has increased rearing opportunities for fry migrants, expanding life history diversity in the Chinook population, including the range of times and sizes that juveniles now enter the ocean (Bottom et al., 2005a). Re-establishing access to shallow wetland and floodplain habitats in the Sacramento River and Delta similarly could extend the time period over which SRFC reach sufficient sizes to enter the ocean, strengthening population resilience to a variable ocean environment.

Hatchery fish are a large and increasing proportion of SRFC (Barnett-Johnson et al., 2007), and a rising fraction of the population is spawning in hatcheries (Fig. 19). The Central Valley salmon hatcheries were built and operated to mitigate the loss of habitat blocked by dams, but may have inadvertently contributed to the erosion of biodiversity within fall Chinook. In particular, the release of hatchery fish into the estuary greatly increases the straying of hatchery fish to natural spawning areas (CDFG and NMFS, 2001). Central Valley fall Chinook are almost unique⁸ among Chinook ESUs in having little or no detectable geographically-structured genetic variation (Williamson and May, 2005). There are two plausible explanations for this. One is that Central Valley fall Chinook never had significant geographical structuring because of frequent migration among populations in response to highly variable hydrologic conditions (on a microevolutionary time scale). The other explanation is that straying from hatcheries to natural spawning areas has genetically homogenized the ESU. One implication of the latter explanation is that populations of SRFC may have lost adaptations to their local environments. It is also likely that hatchery practices cause unintentional evolutionary change in populations (Reisenbichler and Rubin, 1999; Bisson et al., 2002), and high levels of gene flow from hatchery to wild populations can overcome natural selection, reducing the genetic diversity and fitness of wild populations.

Another consequence of the hatchery mitigation program was the subsequent harvest strategy, which until the 1990s was focused on exploiting the aggregate stock, with little regard for the effects on naturally produced stocks. For many years, Central Valley Chinook stocks were exploited at rates averaging more than 60 percent in ocean and freshwater fisheries (Myers et al., 1998). Such levels may not be sustainable for natural stocks, and could result in loss of genetic diversity, contributing to the homogeneity of Central Valley fall Chinook stocks. Harvest drives rapid changes in the life history and morphological phenotypes of many organisms, with Pacific salmon showing some of the largest changes (Darimont et al., 2009). An evolutionary response to the directional selection of high ocean harvest is expected, including reproduction at an earlier age and smaller size and spawning earlier in the season (reviewed by Hard et al. (2008)). A truncated age structure

⁸The exception to this rule is Sacramento River winter-run Chinook, which now spawn only in the mainstem Sacramento River below Keswick Reservoir.

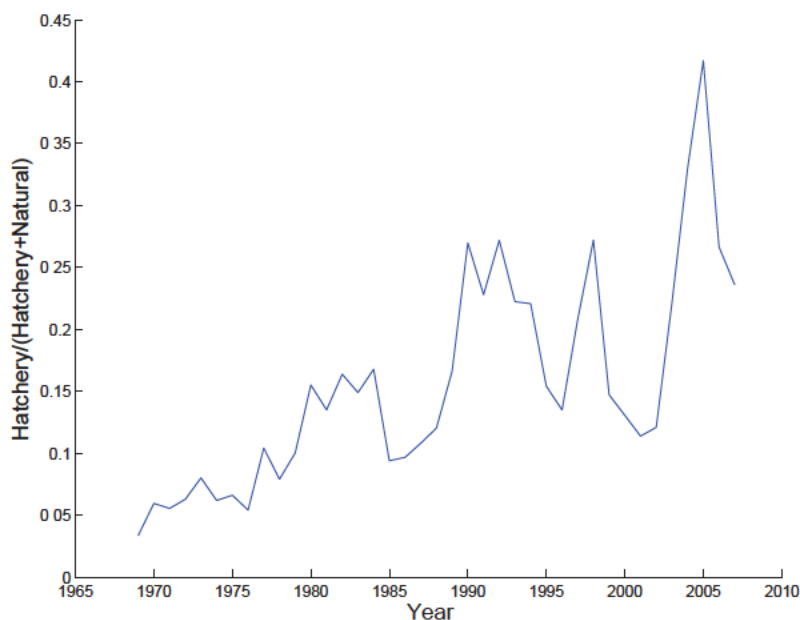


Figure 19: The fraction of total escapement of SRFC that returns to spawn in hatcheries.

may also increase variation in population abundance (Huusko and Hyvärinen, 2005; Anderson et al., 2008).

Hatchery practices also may cause the aggregate abundance of hatchery and natural fish to fluctuate more widely. Increased variability arises in two ways. First, high levels of straying from hatcheries to natural spawning areas can synchronize the dynamics of the hatchery and natural populations. Second, hatcheries typically strive to standardize all aspects of their operations, releasing fish of a similar size at a particular time and place, which hatchery managers believe will yield high returns to the fishery on average. Such strategies can have strong effects on age at maturation through effects on early growth (Hankin, 1990), reducing variation in age at maturity. A likely product of this approach is that the high variation in survival among years and high covariation in survival and maturation among hatchery releases within years may create boom and bust fluctuations in salmon returns, as hatchery operations align, or fail to align, with favorable conditions in stream, estuarine or ocean environments.

Hankin and Logan's (2008) analysis of survival rates from release to ocean age 2 of fall-run Chinook released from Iron Gate, Trinity River and Cole Rivers hatcheries provides an example. Survival of 20+ brood years of fingerling releases ranged from 0.0002 to 0.046, and yearling releases ranged from 0.0032 to 0.26, a 230-fold and 80-fold variation in survival, respectively. Hankin and Logan (2008) found that survival covaried among release groups, with the highest covariation between groups released from the same hatchery at nearly the same time, although covariation among releases from different hatcheries made at similar times was substantial. Because Central Valley fall Chinook are dominated by hatchery production, and Central Valley hatcheries release most of their production at similar times,

this finding is significant: very high variation in ocean abundance and escapement *should be expected* from the system as currently operated.

A similar mechanism has been proposed to explain the collapse of coho salmon fisheries along the Oregon coast following the 1976 ocean regime shift. Cumulative habitat loss, overharvest, and the gradual replacement of diverse wild populations and life histories with a few hatchery stocks left coho salmon vulnerable to collapse when ocean conditions suddenly changed (Lawson, 1993; Lichatowich, 1999; Williams, 2006b)). The situation is analogous to managing a financial portfolio: a well-diversified portfolio will be buffeted less by fluctuating market conditions than one concentrated on just a few stocks; the SRFC seems to be quite concentrated indeed.

4.2 Other Chinook stocks in the Central Valley

Sacramento River fall Chinook have been the most abundant stock of Chinook salmon off of central California in recent decades, but this has not always been the case. Sacramento River winter Chinook, late-fall Chinook and especially spring Chinook once dominated the production of Chinook from the Central Valley (Fisher, 1994), but over the decades have dwindled to a few remnant populations mostly now under the protection of the Endangered Species Act (Lindley et al., 2004). The causes for these declines are the same as those that have affected fall Chinook, but because these other stocks spend some portion of their life in freshwater during the summer, they have been more strongly impacted by impassable dams that limit access to cold-water habitats.

Spring-run Chinook were once the most abundant of the Central Valley runs, with large populations in snow-melt and spring-fed streams in the Sierra Nevada and southern Cascades, respectively (Fisher, 1994). Spring-run Chinook have been reduced from perhaps 18 major populations spawning in four distinct ecoregions within the Central Valley to three remnant populations inhabiting a single ecoregion (Lindley et al., 2007). Winter-run Chinook were less abundant than spring Chinook, spawning in summer months in a few spring-fed tributaries to the upper Sacramento River. Perhaps four distinct populations of winter Chinook have been extirpated from their historical spawning grounds, with survivors founding a population in the tailwaters of Shasta Dam (Lindley et al., 2004). The historical distribution of late-fall-run Chinook is less clear, but their life history requires cool water in summer, and thus their distribution has probably also been seriously truncated by impassable dams at low elevations in the larger tributaries.

An examination of the population dynamics of extant Central Valley Chinook populations illustrates that if spring, winter and late-fall Chinook contributed significantly to the fishery, the aggregate abundance of Chinook in central California waters would be less variable. Populations of Central Valley fall-run Chinook exhibited remarkably similar dynamics over the past two decades, while other runs of Central Valley Chinook did not (Fig. 20 and 21). Almost all fall Chinook populations reached peak abundances around 2002, and have all been declining rapidly since then. In contrast, late-fall, winter and naturally-spawning spring Chinook

976 populations have been increasing in abundance over the past decade, although es-
 977 capement in 2007 was down in some of them and the growth of these populations
 978 through the 1990s and 2000s has to some extent been driven by habitat restoration
 979 efforts. This begs the question of why have these other stocks responded differently
 980 to recent environmental variation.

981 The answer may have two parts. One part has to do with hatcheries. As dis-
 982 cussed above, hatcheries may be increasing the covariation of fall Chinook popu-
 983 lations by erasing genetic differences among populations that might have caused
 984 the populations to respond differently to environmental variation. They may be fur-
 985 ther synchronizing the demographics of the naturally-spawning populations through
 986 straying of hatchery fish into natural spawning areas, a problem exacerbated by out-
 987 planting fish to the Delta and bays. Finally, hatchery practices minimize variation
 988 in size, condition and migration timing, which should tend to increase variation in
 989 survival rates because “bet hedging” is minimized.

990 The other part of the answer may lie in the observation that the other runs of
 991 Chinook have life history tactics that differ in important ways from fall Chinook.
 992 While named according to the time of year that adults enter freshwater, each run
 993 type of Central Valley Chinook has a characteristic pattern of habitat use across
 994 space and time that leads to differences in the time and size of ocean entry. For
 995 example, spring-run Chinook juveniles enter the ocean at a broader range of ages
 996 (with a portion of some populations migrating as yearlings) than fall Chinook, due
 997 to their use of higher elevations and colder waters. Winter run Chinook spawn in
 998 summer, and the juveniles enter the ocean at a larger size than fall Chinook, due
 999 to their earlier emergence and longer period of freshwater residency. Late-fall-run
 1000 Chinook enter freshwater in the early winter, and spawn immediately, but juveniles
 1001 migrate as yearlings the following winter. Thus, if ocean conditions at the time
 1002 of ocean entry are critical to the survival of juvenile salmon, we should expect
 1003 that populations from different runs should respond differently to changing ocean
 1004 conditions because they enter the ocean at different times and at different sizes.

1005 In conclusion, the development of the Sacramento-San Joaquin watershed has
 1006 greatly simplified and truncated the once-diverse habitats that historically supported
 1007 a highly diverse assemblage of populations. The life history diversity of this histor-
 1008 ical assemblage would have buffered the overall abundance of Chinook salmon in
 1009 the Central Valley under varying climate conditions. We are now left with a fish-
 1010 ery that is supported largely by four hatcheries that produce mostly fall Chinook
 1011 salmon. Because the survival of fall Chinook salmon hatchery release groups is
 1012 highly correlated among nearby hatcheries, and highly variable among years, we
 1013 can expect to see more booms and busts in this fishery in the future in response
 1014 to variation in the ocean environment. Simply increasing the production of fall
 1015 Chinook salmon from hatcheries as they are currently operated may aggravate this
 1016 situation by further concentrating production in time and space. Rather, the key to
 1017 reducing variation in production is increasing the diversity of SRFC. In the follow-
 1018 ing section, we make some recommendations towards this goal.

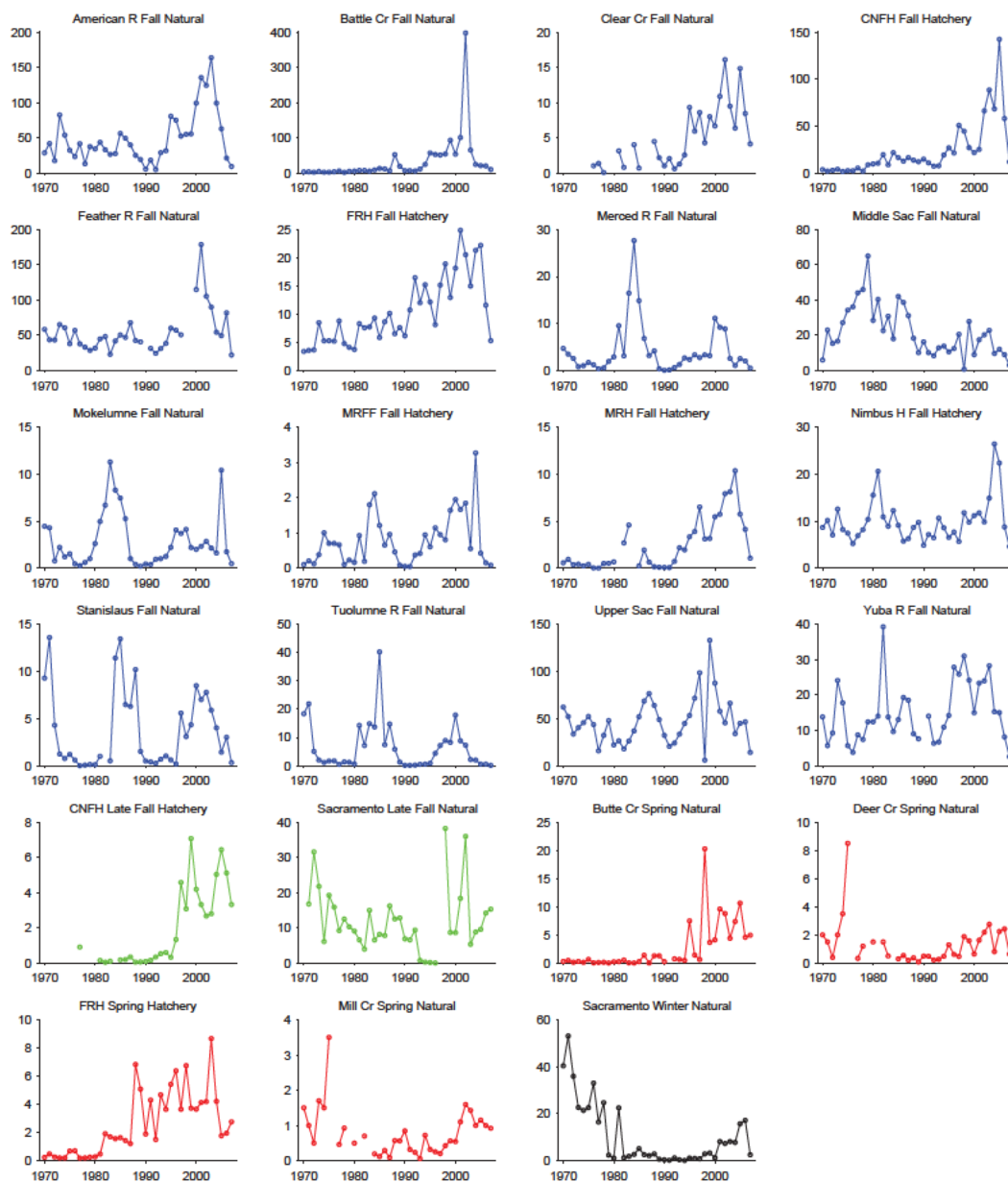


Figure 20: Escapement trends in selected populations of Chinook since 1970. Plots are color-coded according to run timing. Y- axis is thousands of fish; X-axis is year. CNFH = Coleman National Fish Hatchery; FRH = Feather River Hatchery; MRFF = Merced River Fish Facility; MRH = Mokelumne River Hatchery.

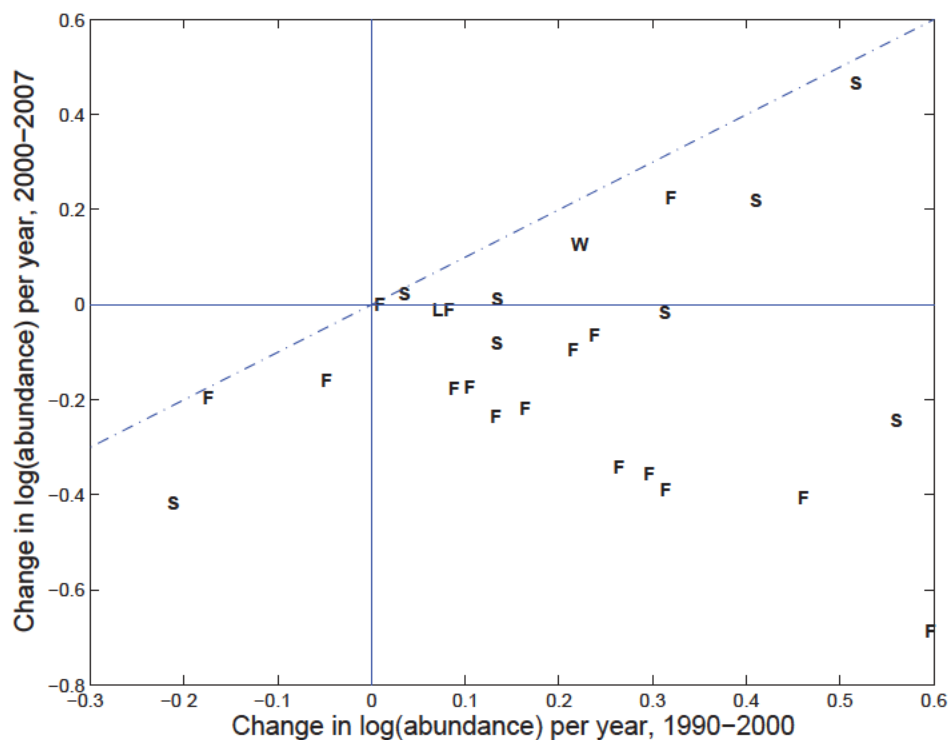


Figure 21: Escapement trends in the 1990s and 2000s of various populations of Chinook. F = fall Chinook, S = spring Chinook, LF= late fall Chinook, W= winter Chinook. If populations maintained constant growth rates over the 1990-2007 period, they would fall along the dashed diagonal line. All populations fall below the diagonal line, showing that growth rates are lower in the 2000s than in the 1990s, and fall Chinook populations have tended to decline the fastest in the 2000s.

5 Recommendations

In this section, we offer recommendations in three areas. First, we identify major information gaps that hindered our analysis of the 2004 and 2005 broods. Filling these gaps should lead to a better understanding of the linkages between survival and environmental conditions. Second, we offer some suggestions on how to improve the resilience of SRFC and the Central Valley Chinook stock complex. While changes in harvest opportunities are unavoidable given the expected fluctuations in environmental conditions, it is the panel's opinion that reducing the volatility of abundance, even at the expense of somewhat lower average catches, would benefit the fishing industry and make fishery disasters less likely. Finally, we point out that an ecosystem-based management and ecological risk assessment framework could improve management of Central Valley Chinook stocks by placing harvest management in the broader context of the Central Valley salmon ecosystem, which is strongly influenced by hatchery operations and management of different ecosystem components, including water, habitat and other species.

5.1 Knowledge Gaps

We are confident in our conclusion that unusual conditions in the coastal ocean in 2005 and 2006 caused the poor performance of the 2004 and 2005 broods. Our case could have been strengthened further, however, with certain kinds of information that are not currently available. Chief among these is the need for constant fractional marking and tagging of hatchery production, and adequate sampling of fish on the natural spawning grounds. Such information would better identify the contribution of hatcheries to the ocean fishery and natural spawning escapement, survival rates of different hatchery release groups, and the likely degree to which hatchery populations are impacting naturally-spawning populations. Central Valley hatcheries have recently started a constant-fractional marking program for fall Chinook, and CDFG is currently planning how to improve in-river sampling for mark and tag recovery. These efforts are critical to improved assessment of SRFC in the future.

CDFG has also recently begun to determine the age of returns to the river, which will allow stock assessment scientists to produce cohort reconstructions of the natural stocks in addition to hatchery stocks. Cohort reconstructions provide better survival estimates than the method used in this report (releases of tagged juvenile and recovery of tagged fish at age-two in recreational fisheries) because they are based on many more tag recoveries and provide estimates of fishery mortality and maturation rates.

In the case of the 2004 and 2005 broods, freshwater factors did not appear to be the direct cause of the collapse, but future collapses may have multiple contributing causes of similar importance. In such cases, it would be extremely valuable to have reach-specific survival rates like those routinely available for several salmonid species in the Columbia River and recently available for late-fall Chinook and steelhead in the Sacramento River. This would provide powerful and direct information

1061 about when and where exceptional mortality occurs.

1062 Observations of growth and energetic condition of Chinook in the estuary and
 1063 ocean provided valuable evidence for the 2004 brood, but were unavailable for the
 1064 2005 and later broods, due to funding limitations.

1065 **5.2 Improving resilience**

1066 It appears that the abundance of SRFC is becoming increasingly variable (Fig. 17).
 1067 Exceptionally high abundance of SRFC may not seem like a serious problem (al-
 1068 though it does create some problems), but exceptionally low abundances are treated
 1069 as a crisis. The panel is concerned that such crises are to be expected at a frequency
 1070 much higher than is acceptable, and that this frequency may be increasing with
 1071 time due to changes in the freshwater environment, the ocean environment, and the
 1072 SRFC stock itself. The main hope of reducing this volatility is increasing the diver-
 1073 sity within and among the populations of fall Chinook in the Central Valley. There
 1074 are a number of ways to increase diversity.

1075 Perhaps the most tractable area for increasing diversity is in changing hatchery
 1076 operations. We recommend that a hatchery science review panel, be formed to
 1077 review hatchery practices in the Central Valley. The panel should address a number
 1078 of questions, including the following:

- 1079 1. assess impacts of outplanting and broodstock transfers among hatcheries on
 1080 straying and population structure and evaluate alternative release strategies
- 1081 2. evaluate alternative rearing strategies to increase variation in timing of out-
 1082 migration and age at maturity
- 1083 3. assess whether production levels are appropriate and if they could be adjusted
 1084 according to expected ocean conditions

1085 Ongoing efforts to recover listed Chinook ESUs and increase natural production
 1086 of anadromous fish in the Central Valley (e.g., the fisheries programs of the Central
 1087 Valley Project Improvement Act) are also relevant to the problem and should be
 1088 supported. In particular, efforts to increase the quantity and diversity of spawning
 1089 and rearing habitats for fall Chinook are likely to be effective in increasing the
 1090 diversity of life history tactics in that stock.

1091 The PFMC should consider creating specific conservation objectives for natural
 1092 populations of SRFC. Especially in coordination with revised hatchery operations
 1093 and habitat restoration, managing for natural production could increase diversity
 1094 within Central Valley fall Chinook. Because conditions for reproduction and juve-
 1095 nile growth are more variable within and among streams than hatcheries, natural
 1096 production can be expected to generate a broader range of outmigration and age-at-
 1097 maturity timings. If straying from hatcheries to natural areas is greatly reduced, the
 1098 population dynamics of natural populations would be less similar to the dynamics of
 1099 the hatchery populations, which would smooth the variation of the stock aggregate.

1100 **5.3 Synthesis**

1101 Addressing hatcheries, habitat and harvest independently would provide benefits
 1102 to Central Valley Chinook, but addressing them together within a holistic frame-
 1103 work is likely to be much more successful. The fisheries management community
 1104 is increasingly recognizing the need to move towards an ecosystem based manage-
 1105 ment approach. While there is still much uncertainty about what this should en-
 1106 tail, the ecosystem-based management and ecological risk assessment (EBM/ERA)
 1107 approach used by the south Florida restoration program (e.g., Harwell et al., 1996;
 1108 Gentile et al., 2001) is readily applicable to management of Central Valley Chinook.
 1109 That approach could lead stakeholders to a common view of the different problems
 1110 afflicting Central Valley Chinook, identify and organize the information needed
 1111 to effectively manage the ecosystem, better connect this information to decision-
 1112 making, and reduce the uncertainty surrounding our decisions.

1113 At the core of the EBM/ERA approach are conceptual models of how the sys-
 1114 tem works. The current fishery management regime for SRFC has some features
 1115 of adaptive management, in that there are clearly stated goals and objectives for
 1116 the fisheries, monitoring and evaluation programs, and an analytic framework for
 1117 connecting the data to decisions about operation of the fishery. If one were to make
 1118 explicit the conceptual model underlying SRFC harvest management, it would in-
 1119 clude hatcheries that maintain a roughly constant output of fish coupled with ocean
 1120 and in-river fisheries operating on aggregate stock abundance. The goal is to max-
 1121 imize harvest opportunities in the current year within constraints posed by vari-
 1122 ous weak stocks, which do not include naturally-spawning populations of SRFC.
 1123 The panel feels that it would be useful to expand this conceptual model to include
 1124 naturally-spawning populations, revised hatchery operations, habitat effects, ocean
 1125 effects, and climate change. Also, resource managers might consider changing the
 1126 goal of management from maximizing harvest opportunity for the current year to
 1127 reducing fluctuations in opportunity from year to year and maintaining the stability
 1128 of the system for the long term. Both of these goals require viable and productive
 1129 populations of wild salmon. Not all of the factors in the revised system would be
 1130 subject to control by fisheries managers, but including them in the model would
 1131 at least make clear the contribution of these factors to the problem of effectively
 1132 managing Chinook salmon fisheries.

1133 The panel is well aware that the resource management institutions are not well-
 1134 equipped to pursue this approach, and that many of the actions that could improve
 1135 the status and resilience of Central Valley Chinook are beyond the authority of the
 1136 PFMC or any other single agency or entity. Nonetheless, significantly improv-
 1137 ing the resilience of Central Valley Chinook and the sustainability of California's
 1138 Chinook salmon fishery will require resource managers and stakeholders to work
 1139 together, and EBM/ERA offers a framework for facilitating such cooperation.

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Appendix A: Assessment of factors relative to the status of the 2004 and 2005 broods of Sacramento River fall Chinook

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Appendix to the pre-publication report to the Pacific Fishery Management Council

March 18, 2009

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1 Purpose of the appendix

In this appendix, we attempt to answer the specific questions posed by the Pacific Fishery Management Council regarding potential causes for the SRFC decline (McIsaac, 2008). Some closely-related questions have been combined. In addition and for completeness, we also address the question of whether ocean salmon fisheries and fishery management contributed to the low escapement of SRFC in 2007 and 2008.

2 Freshwater Biological Focus

2.1 Was the level of parent spawners too low, for natural or hatchery populations?

The abundance of naturally-spawning SRFC adults in 2004 and 2005 was 203,000 and 211,000, respectively (PFMC, 2009). This level of escapement is near the 1970-2007 mean of 195,000 spawners. It therefore does not appear that the level of parent spawners was too low. SRFC adult returns to the hatcheries in 2004 and 2005 were some of the highest on record, well in excess of that needed for egg take, so the level of parent spawners in the hatchery could not have been responsible for the poor adult returns observed in 2007 and 2008.

2.2 Was the level of parent spawners too high, for natural or hatchery populations?

While the level of parent spawners for the 2004 and 2005 broods was higher than average, these levels of abundance are not unusual over the 1970-2007 period, and other broods from similar-sized returns are not associated with particularly low survival. It therefore does not appear that the level of parent spawners was too high on the spawning grounds. Returns to the hatcheries were near record highs, but hatchery managers control the matings of hatchery fish, so it is unlikely that the high level of hatchery returns had a negative impact on hatchery operations.

2.3 Was there a disease event in the hatchery or natural spawning areas? Was there a disease event in the egg incubation, fry emergence, rearing, or downstream migration phases? Was there any disease event during the return phase of the 2 year old jacks?

There were no known disease events affecting naturally-produced brood-year 2004 and 2005 fall-run Chinook in the Sacramento River or tributaries, although there is no routine fish health sampling program for naturally produced fish the Sacramento River system. In the Feather River Hatchery, brood-year 2004 and 2005 Chinook were treated an average of five to six times a year, primarily for bacterial infection. The typical treatment was copper sulfate flushes. This incidence of disease was not unusually high compared to other recent years. In the Mokelumne River Hatchery, brood-year 2004 and 2005 Chinook experienced minimal losses

from coagulated yolks. At the Nimbus Hatchery, there were no significant disease events affecting brood-year 2004 Chinook. Brood-year 2005 fall-run Chinook experienced an outbreak of infectious hematopoietic necrosis (IHN). Losses began to spike in mid-April and continued through May before declining. Losses incurred represented 44% of the fish on hand at the time of the outbreak. However, the hatchery planted 3,002,600 brood-year 2005 fish, approximately 75% of the mitigation goal of 4 million fish. There were no significant disease outbreaks at the Coleman National Fish hatchery for the 2004 and 2005 broods. We therefore conclude that disease events during the freshwater lifestages are an unlikely explanation for the poor performance of the 2004 and 2005 broods.

2.4 *Were there mortalities at the time of trucking and release of hatchery fish?*

No unusual mortality events were noted for these broods.

2.5 *Was there a change in the pattern of on-site release of hatchery fingerlings compared to trucked downstream release? Was there a change in recovery, spawning and/or release strategies during hatchery operations?*

Hatchery practices, particularly the numbers and life stages of fish released, have been stable over the last decade. Coleman National Fish Hatchery has been releasing only smolts or pre-smolts since 2000, and releases from brood-year 2004 and 2005 were at typical levels (Fig. 1). The vast majority of fall-run smolts and pre-smolts have been released at or very near the hatchery, within two weeks of April 15 of each release year. Individual fish size also has remained very steady with the average size at release varying only 2 mm around an average of 75 mm (Fig. 2).

There were no significant changes in broodstock collection or spawning protocols for brood-year 2004 and 2005 fall-run Chinook at state-operated hatcheries in the Sacramento River Basin. Feather River, Mokelumne River, and Nimbus Hatcheries are operated by California Department of Fish and Game (CDFG) according to Operational Plans (Production Goals and Constraints). These plans have not been significantly modified in recent years. Fish ladders at each of the facilities are operated seasonally to allow fall-run to volitionally enter the hatchery. Eggs are taken from fall-run fish to represent the entire spectrum of the run. Some or all of each pooled lot of eggs are retained for rearing according to a predetermined schedule of weekly egg take needs. Sacramento River fall-run Chinook reared for mitigation purposes are released at smolt size (7.5 g or greater), and those reared for enhancement purposes are released at post-smolt size (10 g). Most are transported by truck to the Carquinez Straits-San Pablo Bay area for release from April through July while a small portion may be released in-stream.

The production levels of fall-run Chinook released from each of the Sacramento River Basin state hatchery facilities into anadromous waters from 1990 through 2006 is shown in Fig. 3. From 1990 to 1998, and in 2001, the total production shown includes some releases of fry-sized fish. Production levels for brood-year

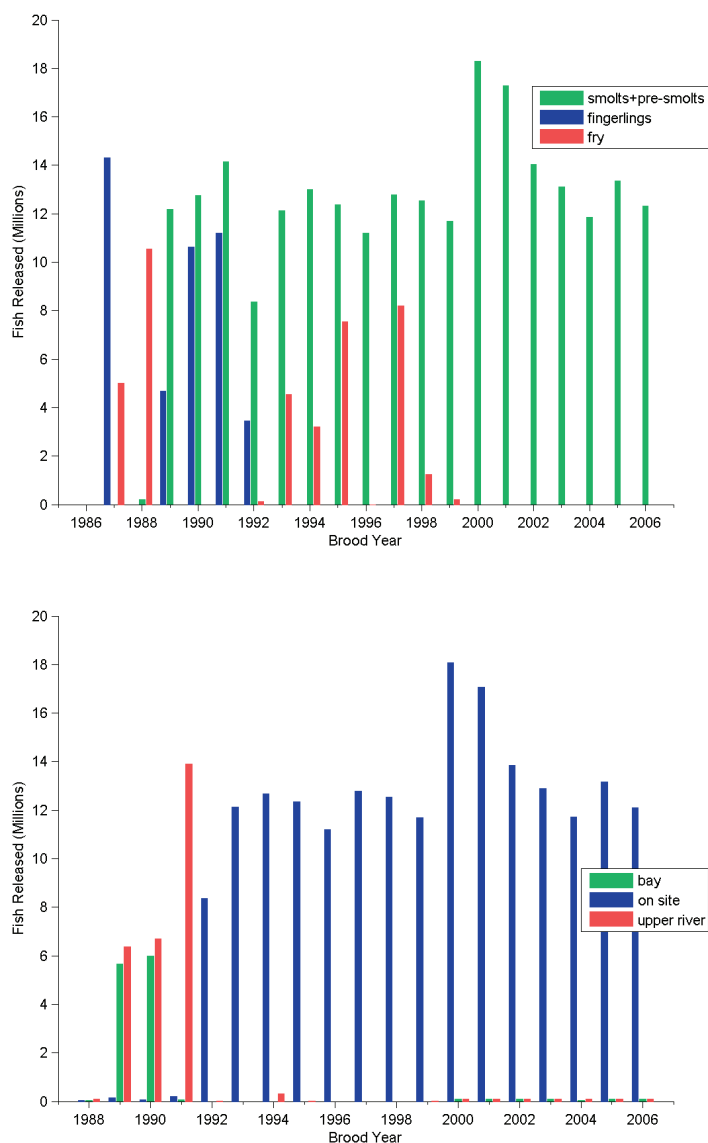


Figure 1: Top: Releases of fall-run Chinook from Coleman National Fish Hatchery. Bottom: number of smolts and pre-smolts released to the bay, upper river and on site (Battle Creek).

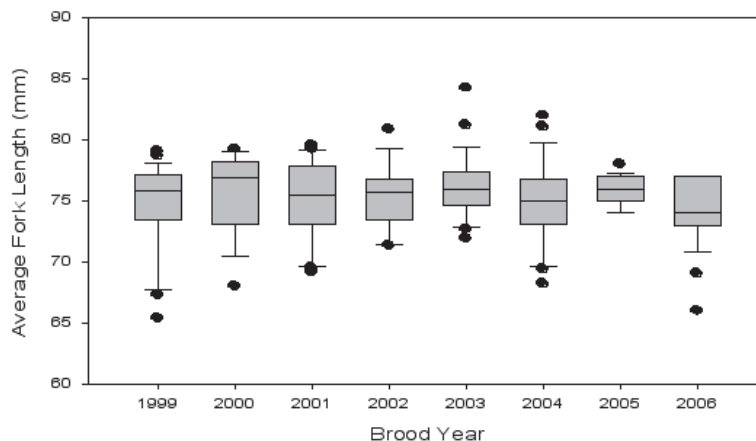


Figure 2: Size of fall Chinook released from Coleman National Fish Hatchery. Horizontal lines indicate mean size, boxes delineate the inner-quartile range, and whiskers delineate the 95% central interval.

2004 and 2005 fall-run Chinook (21.4 million and 19.3 million fish, respectively) were not significantly different from other recent years.

Most of the state hatchery production of Sacramento River fall-run Chinook has been transported to the San Pablo Bay and Carquinez Straits area for release since the 1980s (average of 93% over last decade). Coded-wire tagging studies indicate that transporting salmon smolts or yearlings to San Pablo Bay and Carquinez Straits planting sites significantly increases their survival to adults (unpublished data of CDFG).

Table1 shows the release locations of fall-run Chinook from each of the Sacramento River Basin state hatchery facilities, 1990 to 2006. Instream releases include releases into the stream of origin, the mainstem Sacramento River, or within the Delta. Bay releases include fish transported for release in the San Pablo Bay/Carquinez Straits/San Francisco Bay area or to ocean net pens.

For brood-years 2004 and 2005 (release-years 2005 and 2006), release locations were not changed significantly from other recent years. As in other recent years, more than 95% were transported for release in the San Pablo Bay/Carquinez Straits area.

2.6 Did thermal marking occur for any hatchery releases? What were the effects of this or other studies (e.g. genetic stock identification of parental brood-stock)?

At Feather River Hatchery, a pilot program of otolith thermal marking was conducted on the 2004 brood of fall-run Chinook. The entire 2005 brood was thermally marked. Fish were marked after hatching. There has been an increase in the incidence of cold water disease at the hatchery in recent years, but there is no evidence that the otolith thermal marking study contributed to this increase. The literature on otolith thermal marking reports no adverse effects on survival (Volk et al., 1994).

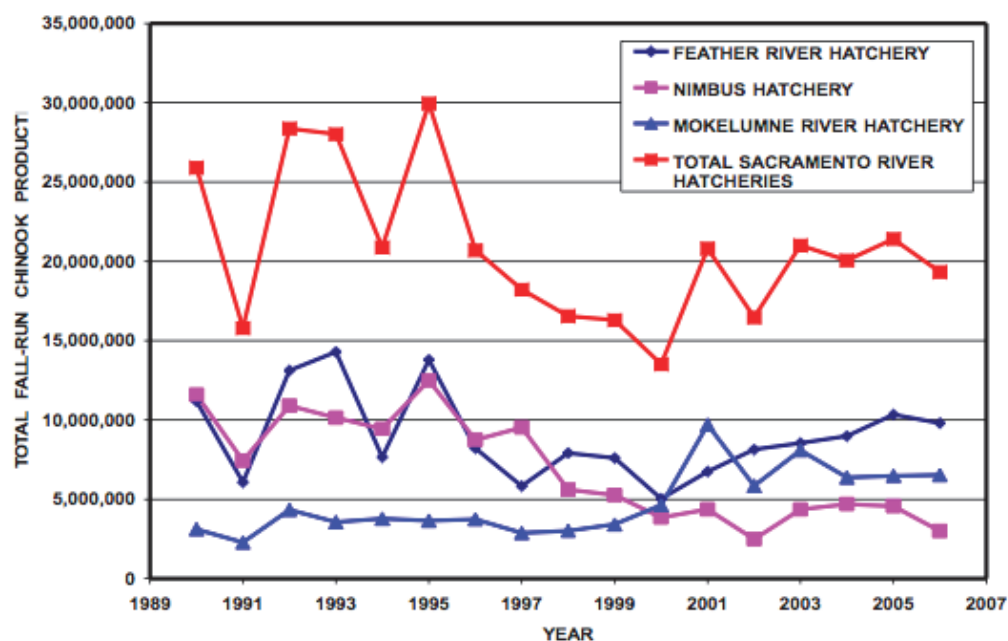


Figure 3: Releases of fall-run Chinook from state hatcheries.

Table 1: Releases of Chinook from state hatcheries.

Release Year	Brood Year	Feather River		Nimbus		Mokelumne	
		Instream	Bay	Instream	Bay	Instream	Bay
1990	1991	3,368,726	7,815,311	6,995,625	438,140	295,150	1,983,400
1991	1992	0	6,078,920	9,963,840	939,652	858,836	3,476,310
1992	1993	3,439,465	9,691,616	9,540,285	602,705	563,414	3,011,600
1993	1994	8,676,431	5,624,222	8,795,300	638,000	1,396,390	2,384,180
1994	1995	0	7,659,432	8,578,437	3,915,870	1,886,084	1,772,800
1995	1996	7,381,185	6,417,755	5,733,951	3,009,840	0	3,740,998
1996	1997	825,785	7,395,468	0	9,520,696	0	2,873,750
1997	1998	854,593	4,978,070	1,253,570	4,348,210	0	3,023,782
1998	1999	1,755,126	6,170,994	0	5,270,678	0	3,422,180
1999	2000	1,834,947	5,769,640	0	3,851,700	0	4,629,559
2000	2001	848,622	4,188,000	101,856	4,273,950	0	9,697,358
2001	2002	997,723	5,746,188	0	2,314,800	0	5,846,743
2002	2003	1,321,727	6,815,718	0	4,361,300	106,506	7,991,961
2003	2004	699,688	7,850,188	115,066	4,578,400	102,121	6,273,839
2004	2005	673,401	8,323,279	0	4,570,000	0	6,485,914
2005	2006	786,557	9,560,592	0	3,002,600	0	6,539,112
2006	2007	1,616,657	10,252,718	0	5,045,900	3,712,240	2,480,391
2007	2008	2,273,413	10,550,968	0	4,899,350	468,736	4,660,707

104 *2.7 Was there a change in the methodology or operations of the San Francisco*
 105 *Bay net pen acclimation program for trucked hatchery fish?*

106 Coleman National Fish Hatchery production is not acclimated in net pens.

107 CDFG initiated a net pen acclimation program for hatchery-reared fall-run Chi-
 108 nook in 1993. When fish are transported for release into the Carquinez Straits-San
 109 Pablo Bay area, they may experience immediate and delayed mortality associated
 110 with the transfer to seawater. Instantaneous temperature and salinity changes are
 111 potential sources of direct mortality as well as indirect mortality due to predation
 112 on disoriented fish and stress-induced susceptibility to disease. Temporary transfer
 113 of salmon yearlings to net pens has been shown to reduce loss of fish due to preda-
 114 tion at the time of their planting and greatly increase survival. A three-year study
 115 by the California Department of Fish and Game (unpublished) found that holding
 116 smolts in net pens for two hours increased the recovery rate by a factor of 2.2 to 3.0
 117 compared to smolts released directly into the bay.

118 The Fishery Foundation of California has been contracted to operate the project
 119 since 1993. Fish are offloaded from CDFG hatchery trucks into the mobile pens in
 120 San Pablo Bay at the Wickland Oil Company pier facility in Selby (between Rodeo
 121 and Crockett) in Contra Costa County from May through July. Upon receiving the
 122 fish, the net pens are towed into San Pablo Bay. The pens are allowed to float with
 123 the current and the fish are held for up to two hours until they become acclimated
 124 to their surroundings. The net pens are then dropped and the fish released in San
 125 Pablo Bay.

126 Methods used for net pen acclimation were not significantly changed from 1993
 127 through 2007, although the number of hatchery fish acclimated in the pens has
 128 varied over the years. Significantly, no hatchery releases from the 2005 brood were
 129 acclimated in net pens before release. The following table shows the total number
 130 of Chinook acclimated in the Carquinez Straits net pens and released from 1993
 131 through 2006.

132 Similar numbers of brood-year 2004 fish were acclimated in the net pens com-
 133 pared to other recent years. For this brood year, there is no evidence that lack of
 134 acclimation contributed to poor escapement in 2007. However, the net pen project
 135 was not operated in the spring of 2006 due to insufficient funds, a change in oper-
 136 ations that may have had a significant impact on the survival of the portion of the
 137 2005 brood produced by state hatcheries.

138 *2.8 Were there any problems with fish food or chemicals used at hatcheries?*

139 Coleman National Fish Hatchery had no issues or problems with fish food or chem-
 140 icals used at the hatchery for the release years 2004-06 that would have caused any
 141 significant post-release mortality (pers. comm., Scott Hamelberg, USFWS).

142 All chemical treatments at the state hatcheries were used under the guidelines
 143 set by the CDFG Fish Health Lab. There were no significant changes in chemical
 144 use or feeds over the 1990-2007 period. Some Bio-Oregon/Skretting salmon feeds
 145 were recalled in 2007 due to contamination with melamine, but this is not believed

Table 2: Releases of Chinook after acclimatization in Carquinez Straits net pens. Data for release years 1993 through 1995 obtained from 2004 net pen project proposal (Fishery Foundation of California). Data for release years 1996 through 2006 obtained from hatchery records (Nimbus, Mokelumne, and Feather River Hatcheries).

Brood Year	Release Year	Number Acclimatized	% Acclimatized
1992	1993	935,900	7
1993	1994	1,600,000	19
1994	1995	4,400,000	33
1995	1996	3,366,596	26
1996	1997	6,102,250	31
1997	1998	4,765,050	39
1998	1999	10,186,340	69
1999	2000	7,667,860	54
2000	2001	10,962,400	60
2001	2002	10,232,429	74
2002	2003	808,900	4
2003	2004	8,773,788	47
2004	2005	8,114,122	42
2005	2006	0	0
2006	2007	4,797,212	27
2007	2008	19,632,289	86

146 to be an issue for the 2004 or 2005 broods, which in any case, exhibited normal
 147 patterns of growth and survival while in the hatchery.

148 **3 Freshwater Habitat Areas Focus**

149 *3.1 Were there drought or flood conditions during the spawning, incubation, or* 150 *rearing phases?*

151 The 2005 water year (when the 2004 brood was spawned, reared and migrated
 152 to sea) had above normal precipitation, and the 2006 water year was wet (based
 153 on runoff, California Department of Water Resources classifies each water year
 154 as either critical, dry, below normal, above normal or wet). In 2005, flows were
 155 typical through the winter, but rose to quite high levels in the spring (Table 3). In
 156 2006, flows were above average in all months, especially so in the spring. High
 157 flows during the egg incubation period can result in egg mortality from scour, but
 158 high flows during the spring are usually associated with higher survival of juvenile
 159 salmon.

160 *3.2 Was there any pollution event where juveniles were present?*

161 The possibility has been raised that exposure of outmigrating juvenile salmon to
 162 toxic chemical contaminants may be a factor in the reduced adult return rates. No-

Table 3: Combined monthly runoff (in millions of acre-feet) of eight rivers in the Sacramento-San Joaquin basin. Data from the California Department of Water Resources (<http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST>). The hi-lighted rows correspond to the spawning, rearing and outmigration periods of the 2004 and 2005 broods.

Water Year	Month					
	Dec	Jan	Feb	Mar	Apr	May
1990	0.45	1.27	0.88	1.84	1.80	1.77
1991	0.34	0.37	0.45	2.64	1.95	2.40
1992	0.47	0.58	2.41	1.99	2.17	1.33
1993	1.25	4.06	3.13	5.70	4.33	5.23
1994	0.78	0.78	1.23	1.49	1.57	1.79
1995	1.06	8.11	3.12	10.19	5.61	7.18
1996	1.72	2.47	6.25	4.25	3.97	5.50
1997	6.84	12.15	2.74	2.45	2.70	2.96
1998	1.18	5.19	7.44	5.11	4.53	5.53
1999	1.88	2.60	4.59	3.67	3.26	4.27
2000	0.65	2.55	5.49	4.08	3.55	3.62
2001	0.67	0.87	1.50	2.39	2.03	2.49
2002	2.50	2.70	1.74	2.31	2.82	2.60
2003	3.24	3.40	1.66	2.52	3.27	4.82
2004	2.14	1.90	3.98	3.47	2.64	2.29
2005	1.56	2.49	2.01	3.75	3.18	7.23
2006	5.82	5.21	3.44	5.30	8.52	6.80
2007	1.31	0.85	2.14	2.06	1.73	1.66
min	0.34	0.37	0.45	1.49	1.57	1.33
mean	1.88	3.20	3.01	3.62	3.31	3.86
max	6.84	12.15	7.44	10.19	8.52	7.23

163 tably, NMFS has recently issued a biological opinion in response to the EPA's pro-
 164 posed re-registration and labeling of three pesticides commonly used in the region.
 165 These pesticides are chlorpyrifos, diazinon, and malathion. In the opinion, NMFS
 166 states 'After considering the status of the listed resources, the environmental base-
 167 line, and the direct, indirect, and cumulative effects of EPA's proposed action on
 168 listed species, NMFS concludes that the proposed action is likely to jeopardize the
 169 continued existence of 27 listed Pacific salmonids as described in the attached Opin-
 170 ion'. However, because so many of the outmigrating salmon which are the subject
 171 of this current analysis are transported around the river system and released into the
 172 bay/delta, it is not likely that chemical contaminants in the river (e.g. urban runoff,
 173 current use pesticides, sewage treatment plant effluents) are the primary driver be-
 174 hind the reduced adult return rates. It is possible that contaminants in the bay/delta
 175 proper may be contributing to a reduced resilience of SR salmon runs overall, but
 176 there are very little empirical data by which to evaluate this hypothesis. Rather,
 177 that possibility is derived from work being done in Puget Sound and the lower
 178 Columbia River, where contaminant exposure in the river and estuary portion of
 179 juvenile salmon outmigration is shown to reduce fitness, with inferred consequence
 180 for reduced early ocean survival.

181 3.3 *Was there anything unusual about the flow conditions below dams during the*
 182 *spawning, incubation, or rearing phases?*

183 Flows below dams in 2004, 2005 and 2006 were consistent with the hydrologic
 184 conditions discussed above (Fig. 4). For the 2004 brood on the Sacramento and
 185 American rivers, flows were near normal during the spawning period, and lower
 186 than normal during the juvenile rearing and migration period. Flows on the Feather
 187 and Stanislaus rivers were substantially below normal during the juvenile rearing
 188 and migration phase for this brood.

189 A different pattern was observed for the 2005 brood, which experienced high
 190 flows late in the year when eggs would be incubating, and generally higher than
 191 normal flows throughout the rearing and migration period in 2006. Flows on the
 192 Stanislaus River were near or at the highest observed from all of 2006. It is likely
 193 that flows were high enough in early January to cause bed load movement and
 194 possibly redd scour in some river reaches. It is difficult to determine the extent of
 195 the scour and loss of eggs but it did come at a time after all of the fall run had
 196 completed spawning and were beginning to emerge. Only 20-30% of the fall run
 197 fry should have emerged by early January in time to avoid the high flows, so loss
 198 could have been significant. These types of flows are generally infrequent but do
 199 occur in years when reservoir carry-over storage is relatively high and rainfall is
 200 high in December and January.

201 3.4 *Were there any in-water construction events (bridge building, etc.) when this*
 202 *brood was present in freshwater or estuarine areas?*

203 According to D. Woodbury (Fishery Biologist with the National Marine Fisheries
 204 Service, Southwest Region, Santa Rosa, California; pers. comm.), the main con-
 205 struction events were pile driving for the Benecia-Martinez Bridge, the Richmond-
 206 San Rafael Bridge, and the Golden Gate Bridge. Pile driving for the Benecia-
 207 Martinez Bridge was completed in 2003. Pile driving for the Richmond-San Rafael
 208 Bridge was conducted between 2002 and 2004. Pile driving for the Golden Gate
 209 Bridge is ongoing, but the largest diameter piles were installed before 2005. At-
 210 tempts are made to limit pile installation to summer months when salmonids are
 211 minimally abundant in the estuary. If piles are installed during salmonid migration,
 212 attenuation systems are used that substantially reduce the level of underwater sound.
 213 Based on the construction schedule for the large bridges (2002-2004), underwater
 214 sound from the installation of large diameter steel piles should not have limited
 215 salmonid returns in 2007. There is no evidence these activities had a significant
 216 impact on production of the 2004 or 2005 broods.

217 3.5 *Was there anything unusual about the water withdrawals in the rivers or es-*
 218 *tuary areas when this brood was present?*

219 Statistical analysis of coded-wire-tagged releases of Chinook have shown that sur-
 220 vival declines when the proportion of Sacramento River flow entering the interior

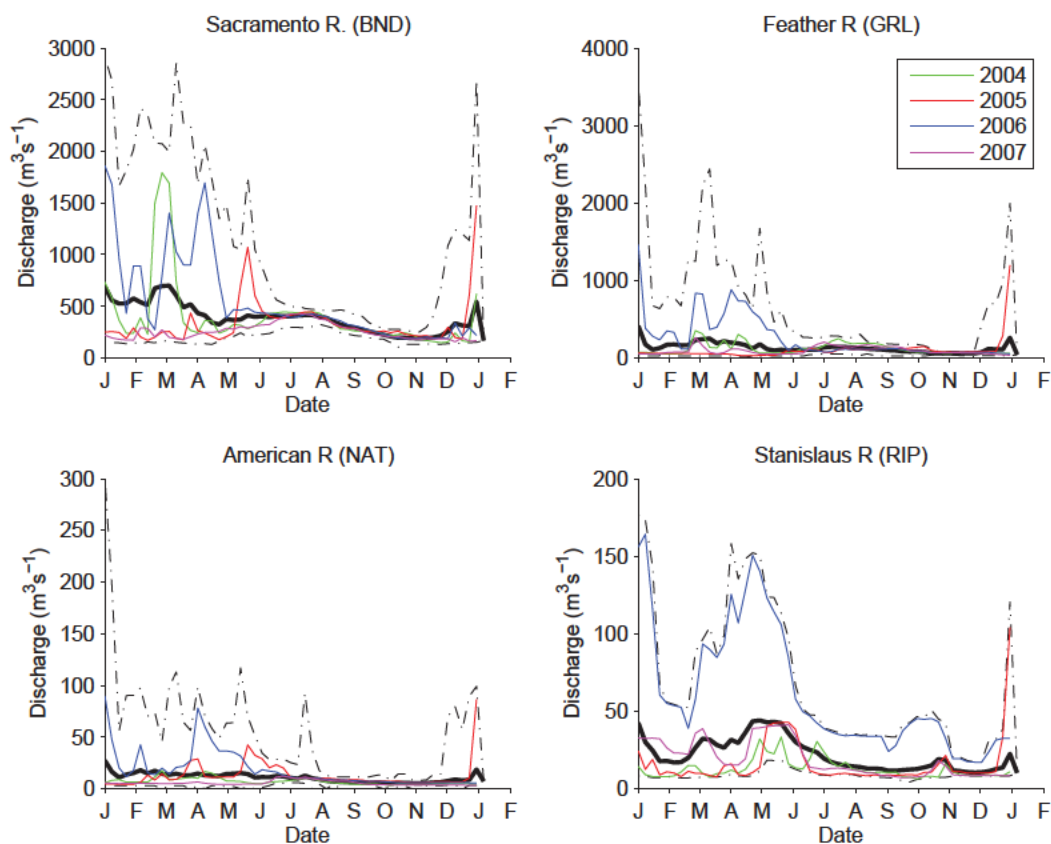


Figure 4: Weekly mean discharge at selected stations on the Sacramento, Feather, American and Stanislaus rivers. Heavy black line is the weekly mean flow over the period of record at each station (BND=1993-2007; GRL=1993-2007, NAT=1990-2007, RIP=1999-2007); dashed black lines are the maximum and minimum flows. Colored lines are average weekly flows for 2004 (green), 2005 (red) and 2006 (blue). Data from the California Data Exchange Center (<http://cdec.water.ca.gov/>).

Table 4: Estimated loss of fall- and spring-run Chinook fry and smolts at Delta water export facilities. Water year corresponds to outmigration year. Unpublished data of California Department of Water Resources.

Water Year	Non-clipped Loss	Adclipped Loss
1997	78,786	4,017
1998	124,799	5,282
1999	262,758	42,864
2000	210,180	17,030
2001	114,058	3,614
2002	19,166	6,545
2003	51,802	2,854
2004	38,938	703
2005	59,148	9,860
2006	56,227	1,935
2007	8,045	81

Delta rises (Kjelson and Brandes, 1989) and that there is a weak negative relationship between survival and the ratio of water exported from the Delta to water entering the Delta (the E/I ratio) (Newman and Rice, 2002). In January 2005, water diversion rates, in terms of volume of water diverted, reached record levels in January before falling to near-average levels in the spring, then rising again to near-record levels in the summer and fall, presumably after the migration of fall Chinook smolts. Water diversions, in terms of the E/I ratio, fluctuated around the average throughout the winter and spring (Fig. 5). In 2006, total water exports at the state and federal pumping facilities in the south delta were near average in the winter and spring, but the ratio of water exports to inflow to the Delta (E/I) was lower than average for most of the winter and spring, only rising to above-average levels in June. Total exports were near record levels throughout the summer and fall of 2006, after the fall Chinook emigration period (Fig. 6).

At the time the majority of fall-run Chinook are emigrating through the Delta, the Delta Cross Channel (DCC) gates are closed. The 1995 Water Quality Control Plan requires the gates to be closed from February 1 through May. Therefore, for the majority of period that fall-run Chinook are emigrating through the lower Sacramento River, they are vulnerable to diversion into the interior Delta only through Georgianna Slough, not the through the DCC. Loss of Chinook fry and smolts at the Delta export facilities in 2005 and 2006 were lower than the average for the 1997-2007 period (Table 4). Because of the timing of water withdrawals, it seems unlikely that the high absolute export rates in the summer months had a strong effect on the 2004 and 2005 broods of SRFC.

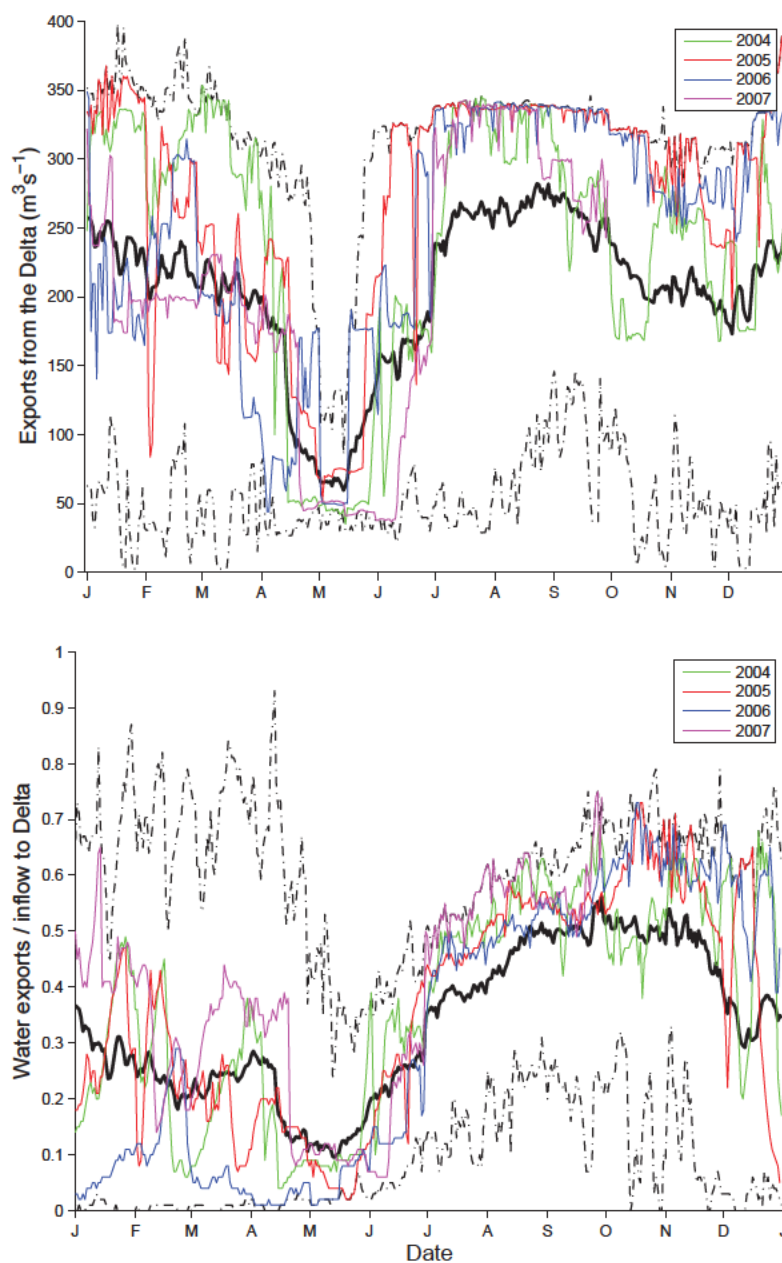


Figure 5: Daily export of freshwater from the delta (upper panel) and the ratio of exports to inflows (bottom panel). Heavy black line is the daily average discharge over the 1955-2007 period; dashed black lines indicate daily maximum and minimum discharges. Flow estimates from the DAYFLOW model (<http://www.iep.ca.gov/dayflow/>).

244 3.6 Was there an oil spill in the estuary when the 2005 brood was present, as
245 juveniles or jacks?

The cargo ship *Cosco Busan* spilled 58,000 gallons of bunker fuel into San Francisco Bay on 7 November 2007, when the bulk of 3-year-olds from the 2004 brood and 2-year-olds from the 2005 brood would have been upstream of the Bay by November, so it is unlikely that this spill had much effect on these broods. No other spills were noted.

251 3.7 *Were there any unusual temperature or other limnological conditions when*
252 *this brood was in freshwater or estuarine areas?*

Upper river– Water temperatures were fairly normal at Red Bluff Diversion Dam for 2005 and 2006 (Fig. 7). Temperatures were slightly warmer than normal in the early part of 2005, and slightly colder than normal in the early part of 2006. In the early part of both years, and especially in 2005, turbidity at Red Bluff Diversion Dam was quite low for extended periods between turbidity pulses.

Estuary and Bay—An analysis of water quality and quantity data found no indications that aquatic conditions contributed to the decline of the 2004 or 2005 brood year fall-run Chinook. Mean water temperature between January and June, which spans the time of juveniles emigrating through the estuary, was 14.4°C and 12.5°C for 2005 and 2006, respectively, when the juveniles of the 2004 and 2005 broods outmigrated. These temperatures are well within the preferred range of juvenile Chinook, and within the range of annual means between 1990 and 2008 (19-year mean: $13.8 \pm 1.0^\circ\text{C}$ (SE).) (Figure 8a).

Mean salinity in the estuary between January and June was 11.9 and 8.7 for 2005 and 2006, respectively. These are typical values for San Francisco Estuary and reflect relative differences in freshwater outflow and/or measurements at different

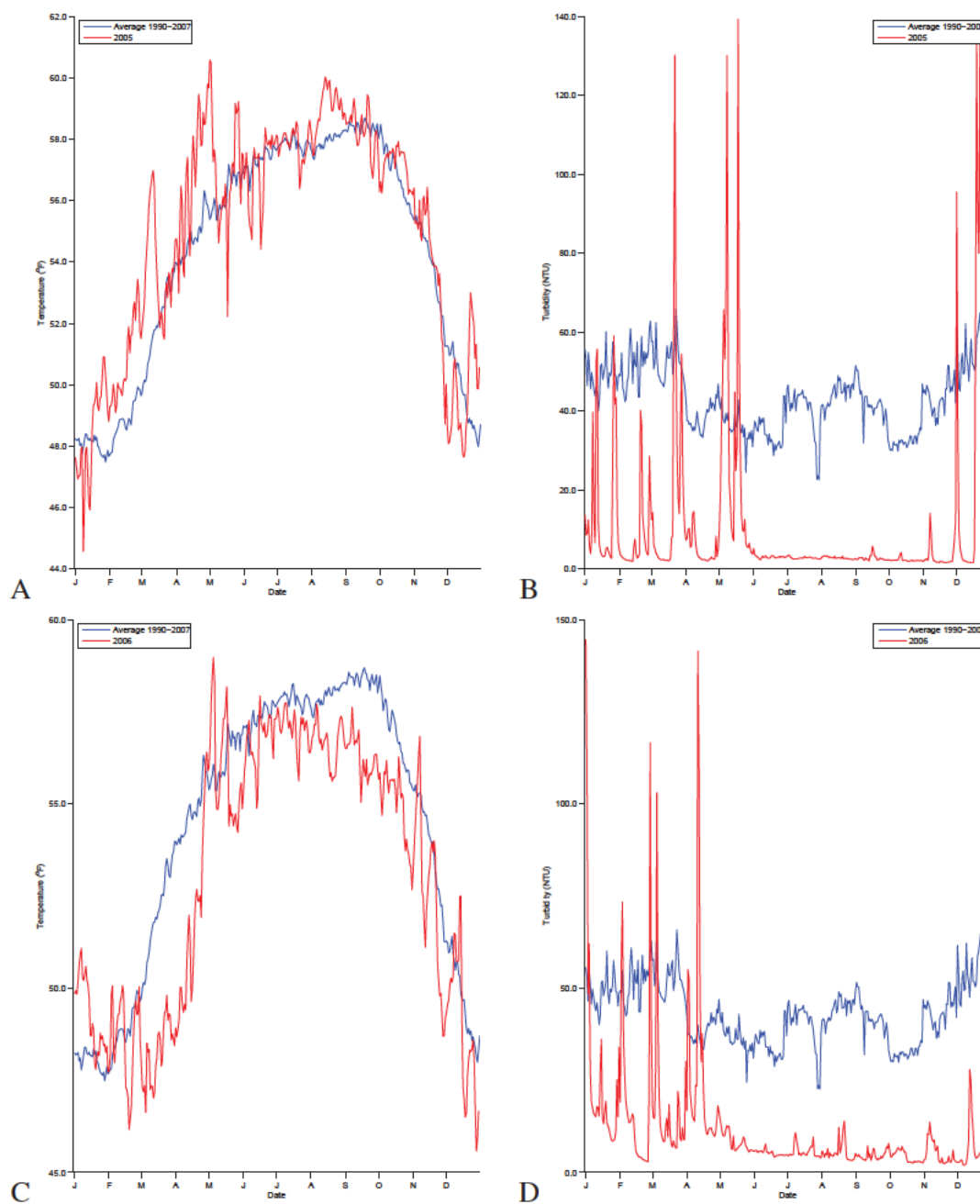


Figure 7: Temperature (A and C) and turbidity (B and D) in 2005 and 2006 at Red Bluff.

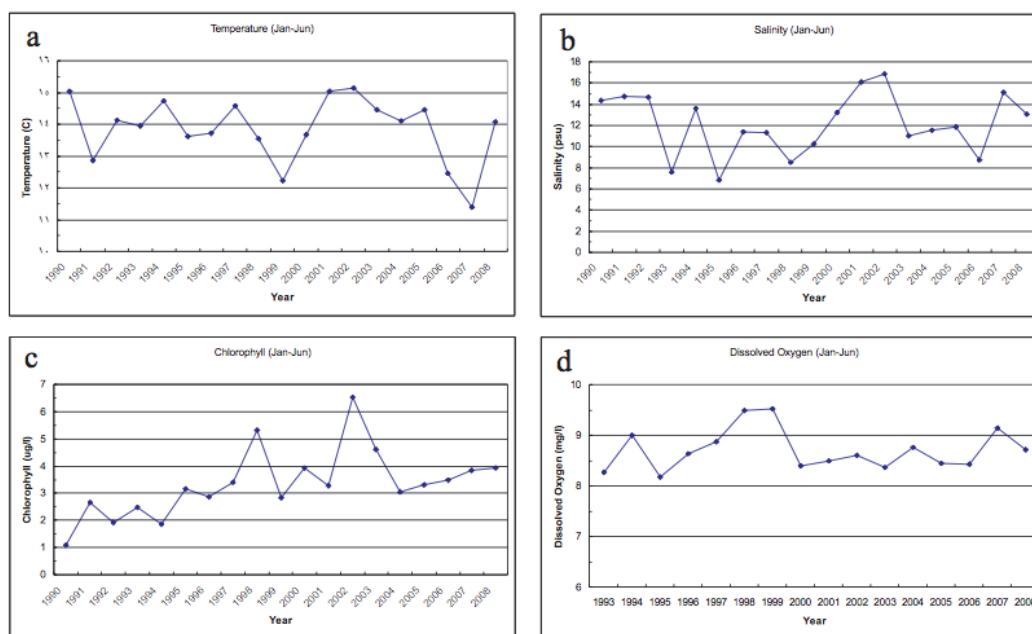


Figure 8: Mean annual values near the surface between January and June for a) water temperature, b) salinity, c) chlorophyll, and d) dissolved oxygen for San Francisco Estuary between Chipps Island and the Golden Gate. (Source: USGS Water Quality of San Francisco Bay: <http://sfbay.wr.usgs.gov/water/>.)

times on the tidal cycle. Mean salinity for the 19 years was 12.1 ± 2.9 (Fig. 8b).

Mean chlorophyll concentrations, an indicator of primary productivity, were similar to the long-term mean of 3.3 ± 1.2 mg/l (Fig. 8c). The mean chlorophyll concentrations for 2005 and 2006 were 3.3 and $3.5 \hat{1}_{4}$ g/l, respectively, indicating neither an oligotrophic or eutrophic system. The long-term trend, however, does suggest an increasing amount of phytoplankton in the estuary.

As with the other hydrologic variables, dissolved oxygen concentrations were within the span typical of the estuary and do not reveal hypoxia as a contributor to the salmon decline (Fig. 8d). Mean O_2 levels were 8.4 mg/l for both years, which is the same as the long-term average of 8.7 ± 0.4 mg/l.

Freshwater outflow has been highly variable in the period 1990 to 2007 (Figure 9). During the outmigrating season, mean flows were 963 and 3,033 m^3s^{-1} for 2005 and 2006, respectively. The long-term mean for January to June is $1,190 \pm 978 m^3s^{-1}$, thus 2005 was a relatively dry year and 2006 a relatively wet year. In fact, 2006 had the greatest mean outflow of any year in the past 18. High flows through the estuary are considered beneficial for juvenile salmonids, thus 2006 was favorable. Although 2005 had lower flows, it was situated in the middle of the range: nine years had lower flows, eight had higher. Since 2001 and 2005 had similar values, and since fall Chinook returns were high and low respectively in those years, it would seem that flow does not appear to be a factor contributing to the poor survival of the 2004 and 2005 broods.

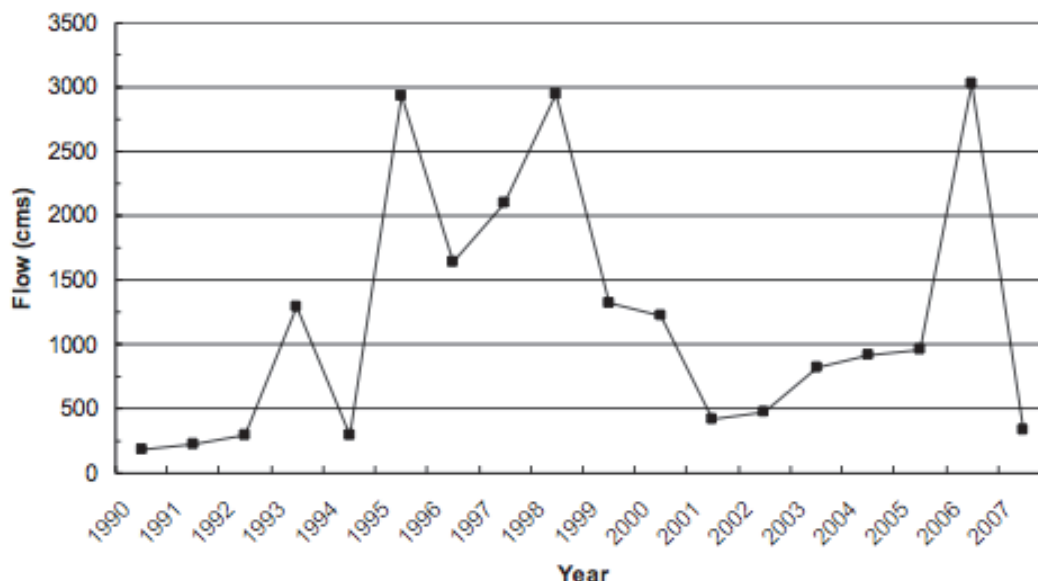


Figure 9: Mean annual freshwater outflow through San Francisco Estuary between January and June. (Source: <http://iep.water.ca.gov/dayflow/>).

3.8 *Were there any unusual population dynamics of typical food or prey species used by juvenile Chinook in the relevant freshwater and estuarine areas?*

Juvenile Chinook feed on a wide variety of organisms during freshwater and estuarine phases of their life cycle (MacFarlane and Norton 2002). Stomach contents of fish sampled at the west end of the Delta, at Chipps Island, had decapods, mysids, amphipods and insects as the primary prey. In particular, the gammaridean amphipod *Corophium* is a dominant food item. In Suisun Bay, larval aquatic and terrestrial insects form a major part of juvenile Chinook diets, but mysids, amphipods, small fish, and calanoid copepods are also important food items. In San Pablo Bay, cumaceans make up a large fraction of stomach contents, but insects remain important. In the central San Francisco Bay, small fish greatly dominate the stomach contents, but cumaceans and amphipods are often present. These species are not sampled regularly, or at all, in the salmon outmigrating corridor, except for calanoid copepods, which are monitored by the Interagency Ecological Program (IEP) at stations in the Delta, Suisun and San Pablo Bays. Although calanoid copepods are not a major food item to juvenile salmon, they represent an important component of aquatic food webs and offer a view of the zooplankton community and will be used here as a surrogate for the juvenile prey community.

The IEP zooplankton survey categorizes copepod samples into salinity zones: less than 0.5, 0.5–6, and greater than 6. Fluctuations in the annual copepod abundance can be large, ranging from 2,000 to over 7,000 copepods m^{-3} (Fig. 10). The annual mean abundance since 1990 is $4,238 \pm 322$ (SE) copepods/ m^3 for the combined total of the samples from the three salinity bands. In 2005 the mean abundance of copepods was $3,300 m^{-3}$. This value is 21% below the longer term

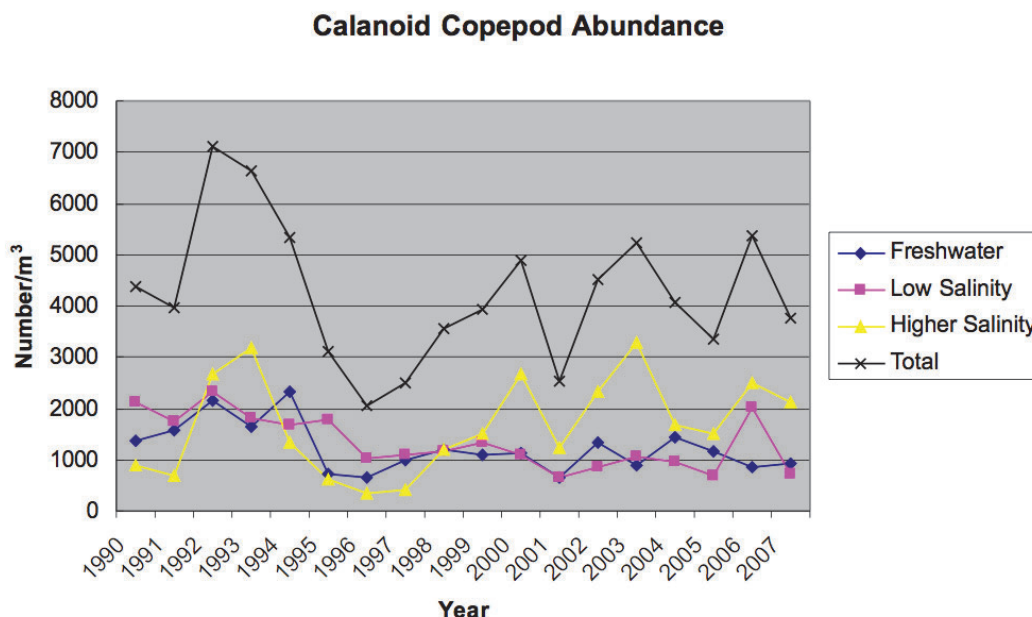


Figure 10: Mean annual abundance of calanoid copepods in the Delta, Suisun Bay and San Pablo Bay from 1990 and 2007 (Sources: Wim Kimmerer, Romberg Tiburon Center for Environmental Studies, San Francisco State University, Tiburon, California; <http://www.delta.dfg.ca.gov/baydelta/monitoring/>). Freshwater is <0.5, low salinity is 0.5-6, and higher salinity is > 6.

average, but is not the lowest during the time interval. The years 1995-1997 and 2001 were all lower. Further, the copepod concentrations that largely drive the interannual fluctuations are those found in salinities above 6, which are typically in lower Suisun Bay and San Pablo Bay where other food items dominate. In 2006, zooplankton abundance was higher than 2005, except in the freshwater zone. Taken together, there is no compelling evidence that zooplankton abundance, or other prey for juvenile salmon, in freshwater and estuarine life phases played a role in the poor survival of the 2004 and 2005 broods of SRFC.

3.9 Was there anything unusual, in the same context as above for juvenile rearing and outmigration phases, about habitat factors during the return of the 2 year olds from this brood?

No unusual habitat conditions were noted.

3.10 Were there any deleterious effects caused by miscellaneous human activities (e.g., construction, waterfront industries, pollution) within the delta and San Francisco bay areas?

The construction of the Benicia Bridge is discussed in question 4 above, and the Cosco Busan oil spill is discussed in question 6. No other unusual activities or events were noted for these broods.

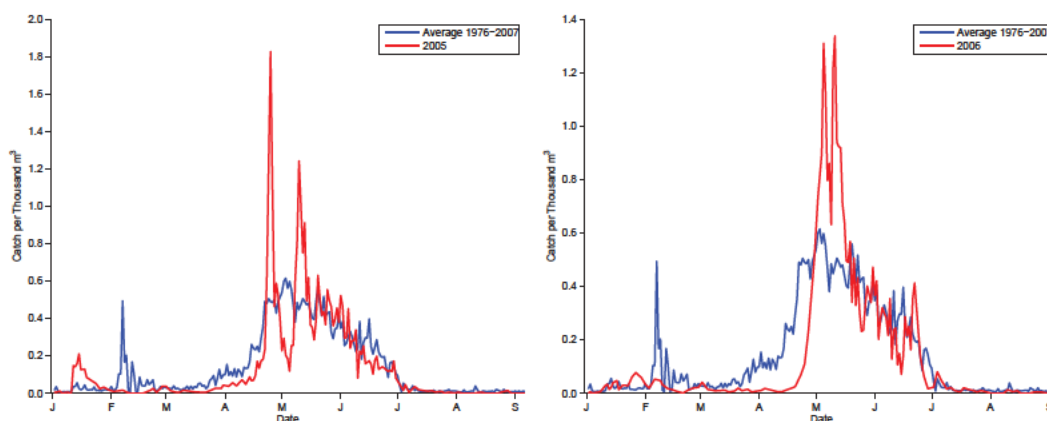


Figure 11: Daily catches of juvenile fall-run Chinook at Chipps Island in 2005 (left) and 2006 (right), in red, compared to average daily catches (in blue) for 1976-2007.

3.11 Was there a change in the recovery of juvenile outmigrants observed in the USFWS mid-water trawl surveys and other monitoring programs in the Delta.

Patterns of juvenile recoveries by midwater trawling near Chipps Island in 2005 and 2006 were similar in 2005 and 2006 compared to the pattern observed in other recent years (Fig. 11). In 2005, total catch and the timing of catches was quite near the average for the 1976-2007 period of record. In 2006, total catches were a bit higher than average, with typical timing.

4 Freshwater Species Interactions Focus

4.1 Was there any unusual predation by bird species when this brood was in freshwater or estuarine areas?

None was noted.

4.2 Was there any unusual sea lion abundance or behavior when this brood was in freshwater or estuarine areas?

None was noted.

4.3 Was there any unusual striped bass population dynamics or behavior when this brood was in freshwater or estuarine areas?

Annual abundance estimates for adult striped bass in the Sacramento-San Joaquin Estuary from 1990 through 2005 are shown in Table 5. Estimates represent the number of adult fish in the estuary in the spring of the reporting year. The estimate for 2005 is preliminary and subject to change based on additional data. There is no estimate for 2006 because tagging was not conducted in that year.

Table 5: Striped bass abundance. NA indicates estimate unavailable. Unpublished data of CDFG.

Year	Abundance
1990	830,742
1991	1,045,975
1992	1,071,805
1993	838,386
1994	908,480
1995	NA
1996	1,391,745
1997	NA
1998	1,658,379
1999	NA
2000	2,133,043
2001	NA
2002	1,296,930
2003	1,179,656
2004	1,904,623
2005	1,373,886
2006	NA

354 Brood-year 2004 and 2005 fall-run Chinook emigrated through the estuary, and
 355 were vulnerable to predation by adult striped bass, in the spring of 2005 and 2006.
 356 In 2005, the preliminary estimate of adult striped bass abundance was not signifi-
 357 cantly higher than in previous years. In 2000, the striped bass population was the
 358 highest among recent years, when the brood-year 1999 fall-run Chinook were em-
 359 migrating through the estuary. This year class returned to spawn in 2002 at record
 360 high levels.

361 There is no apparent correlation between the estimated abundance of the adult
 362 striped bass population in the estuary and the subsequent success of Sacramento
 363 River Basin fall-run Chinook year classes. Predation in freshwater may be a signif-
 364 icant factor affecting survival of fall-run Chinook emigrating through the system,
 365 but there is no indication that increased predation in the spring of 2005 or 2006
 366 contributed significantly to the decline observed in the subsequent escapement of
 367 Sacramento River fall-run Chinook.

368 *4.4 Were northern pike present in any freshwater or estuarine areas where this*
 369 *brood was present?*

370 Northern pike have not been noted in these areas to date.

371 4.5 *Is there a relationship between declining Delta smelt, longfin smelt, and threadfin*
 372 *shad populations in the Delta and Central Valley Chinook survival?*

373 Indices of abundance for Delta smelt (*Hypomesus transpacificus*), longfin smelt
 374 (*Spirinchus thaleichthys*), and threadfin shad (*Dorosoma petenense*) from the Cali-
 375 fornia Department of Fish and Game's Fall Mid-water Trawl Surveys in the Delta,
 376 Suisun Bay, and San Pablo between 1993 and 2007 reveal a pattern of substantial
 377 variation in abundance (Fig. 12). From 1993 to 1998, Delta smelt and longfin smelt
 378 abundances vary similarly among years; Threadfin Shad dynamics were somewhat
 379 out of phase with the smelt species. However, longfin smelt abundances declined
 380 greatly from 1998 to 2002, about one year prior to Delta smelt declines. By 2002,
 381 all three species were in low numbers in the study area and have remained low
 382 since. Juvenile salmon abundance between April and June at Chipps Island was
 383 somewhat reflective of threadfin shad abundance until 2002, but then departed from
 384 the shad trend (Fig. 12). Since 2002, juvenile salmon abundance appears to be
 385 increasing, in general, but there are relatively wide variations among years. In par-
 386 ticular, juvenile fall-run abundance appeared to be relatively high in 2004. In 2005,
 387 the abundance index value was greater than in 2002 and 2003, but below estimates
 388 for 2006 and 2007. Correlation analysis found no significant relationships ($P > 0.05$)
 389 between population fluctuations of the smelt and shad species with juvenile fall-run
 390 Chinook catch at Chipps Island. Differences in abundance patterns between juve-
 391 nile salmon at Chipps Island and the three other species, which are all species of
 392 concern in the Pelagic Organism Decline (POD) in the Delta, indicate that whatever
 393 is affecting the POD species is not a major influence on juvenile salmon production
 394 in the Central Valley.

395 4.6 *Was there additional inriver competition or predation with increased hatchery*
 396 *steelhead production?*

397 Releases of steelhead from state and federal hatcheries have been fairly constant
 398 over the decade, suggesting that predation by steelhead is an unlikely cause of the
 399 poor survival of the 2004 and 2005 broods of fall-run Chinook.

400 **5 Marine Biological Focus**

401 5.1 *Was there anything unusual about the ocean migration pattern of the 2004*
 402 *and 2005 broods? Was there anything unusual about the recovery of tagged*
 403 *fish groups from the 2004 and 2005 broods the ocean salmon fisheries?*

404 Unfortunately, in contrast to previous years, little of the 2004 and 2005 broods
 405 were coded-wired tagged at the basin hatcheries. As a consequence the informa-
 406 tion available for addressing these questions is limited to Feather River Hatchery
 407 (FRH) fall Chinook coded-wire tag recoveries. The analysis was further restricted
 408 to recreational fishery age-2 recoveries for the following reasons. First, it is gen-
 409 erally accepted that SRFC brood recruitment strength is established prior to ocean

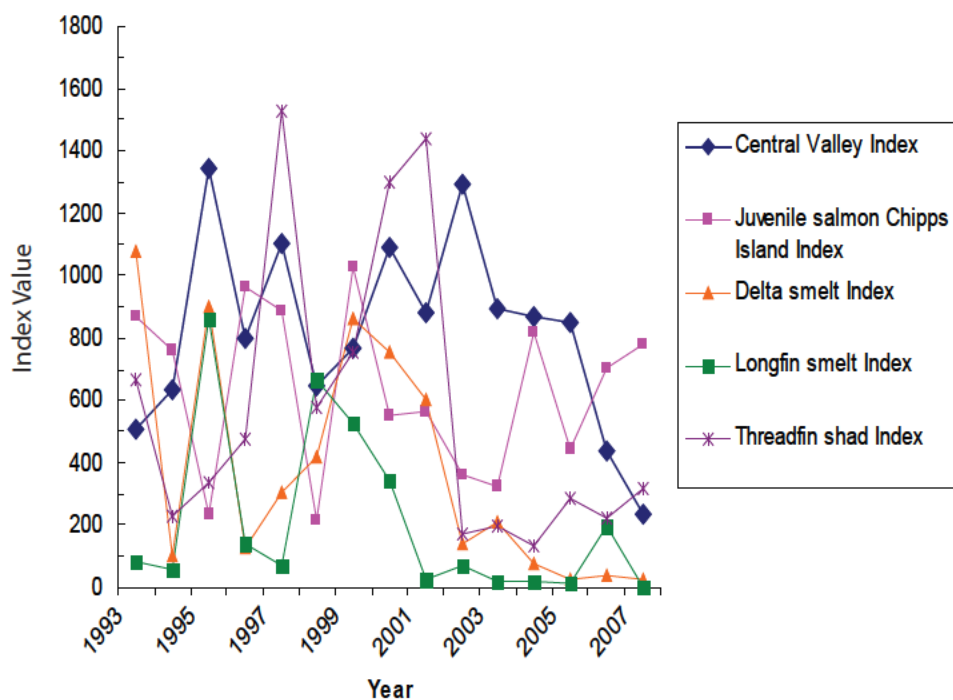


Figure 12: Abundance indices for Delta smelt, longfin smelt, and threadfin shad from California Department of Fish and Game Mid-water Trawl Surveys between 1993 and 2007 in the Delta, Suisun Bay, and San Pablo Bay (Source: <http://www.delta.dfg.ca.gov>)

age-2. Thus, age-2 recoveries provide the least disturbed signal of brood strength and distribution prior to the confounding effects of fishery mortality. Second, many more age-2 fish are landed by the recreational fishery than by the commercial fishery, in part because of differences in the minimum size limits for the two fisheries. Effort in the recreational fishery is also generally more evenly distributed along the coast and more consistent across years than in the commercial fishery.

Ocean salmon recreational fishery coded-wire tag recoveries of age-2 FRH fall Chinook, brood years 2000-2005, were expanded for sampling and summed across months by major port area for each brood year. Catch per unit of effort (CPUE) was derived by dividing the expanded recoveries by the corresponding fishing effort. For any given recovery year, assuming catchability is the same for each port area, the pattern of CPUE across the port areas reflects the ocean distribution of the cohort (Fig. 13). The coherent pattern across brood years suggests that the ocean distribution of age-2 fish was similar for all of these broods, and concentrated in the San Francisco major port area.

Within a port area, assuming catchability is the same each year, differences in CPUE across brood years reflect differences in the age-2 abundance of these broods. Clearly, the 2004 and 2005 (and 2003) brood age-2 cohorts were at very low abundance relative to the 2000-2002 broods (Fig. 13). Was this because there were fewer numbers of coded-wire tagged FRH fall Chinook released in those years, or was it the result of poor survival following release? The number of released fish was very similar in each of these brood years (Table 6), except for brood-year 2003 which was about half that of the other years. An index of the survival rate from release to ocean age-2 was derived by dividing the San Francisco major port area CPUE by the respective number of fish released (Table 6, Figure 14). The San Francisco CPUE time series is the most robust available for this purpose given that the number of recoveries it is based are significantly greater than those for the other ports (stock concentration and fishing effort is highest here). This index is proportional to the actual survival rate to the degree that the fraction of the age-2 ocean-wide cohort abundance and catchability in the San Francisco major port area remains constant across years, both of which are supported by the coherence of the CPUE pattern across all areas and years (Fig. 13). The survival rate index shows a near monotonic decline over the 2000-2005 brood-year period (Table 6, Fig. 14). In particular, the survival rate index for 2004 and 2005 broods was very low: less than 10% of that observed for the 2000 brood (Table 6, Fig. 14). The survival rate index in turn is fairly well-correlated with the SRFC jack escapement for the 2000-2005 broods (correlation = 0.78, Fig. 15). Taken together, this indicates that the survival rate was unusually low for the 2004 and 2005 broods between release in San Francisco Bay and ocean age-2, prior to fishery recruitment, and that brood year strength was established by ocean age-2. Genetic stock identification methods applied to catches in the Monterey Bay salmon sport fishery showed relatively low abundance of Central Valley fall Chinook in the 2007 landings (Fig. 16). We also note that the survival rate for the 2003 brood was also considerably lower than for previous broods in this decade.

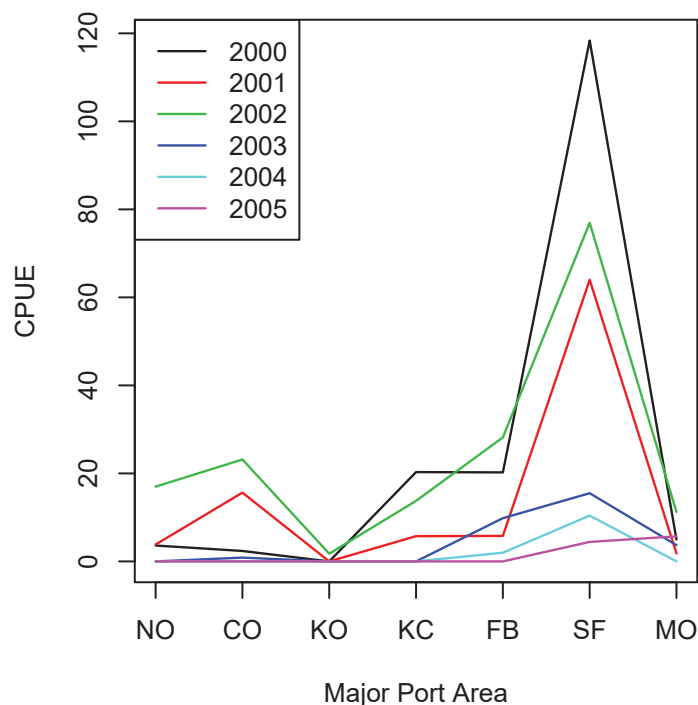


Figure 13: Recreational fishery CPUE of age-2 FRH fall Chinook by major port area; brood-years 2000-2005. CPUE was calculated as Recoveries / Effort, where “Recoveries” is coded-wire tag recoveries expanded for sampling; “Effort” is fishing angler days $\times 10^{-4}$. Major port areas shown from north to south: “NO” is northern Oregon; “CO” is central Oregon; “KO” is the Klamath Management Zone, Oregon portion; “KC” is the Klamath Management Zone, California portion; “FB” is Fort Bragg, California; “SF” is San Francisco, California; “MO” is Monterey, California.

5.2 Has the bycatch in non-salmonid fisheries (e.g., whiting, groundfish) increased?

Bycatch of Chinook in trawl fisheries off of California has been variable over the last two decades (Fig. 17). The magnitude of bycatch by trawl fisheries is quite small compared to combined landings by the commercial and recreational salmon fisheries (1.4 metric tons (t) and 686 t respectively, in 2007), so it is unlikely that variations in bycatch in non-salmonid fisheries are an important cause of variation in the abundance of Chinook.

6 Marine Habitat Areas Focus

6.1 Were there periods of reduced upwelling or other oceanographic physical conditions during the period of smolt entry into the marine environment, or during the period of marine residence up to the return to freshwater of the jacks?

Conditions in the coastal ocean in the spring of 2005 were unusual. Most notably, the onset of upwelling was delayed significantly compared to the climatological average (Schwing et al., 2006); Fig. 18) due to weaker than normal northerly winds

Table 6: Recreational fishery coded-wire tag recoveries of age-2 FRH fall Chinook in the San Francisco major port area, brood-years 2000-2005. "Released" is number released $\times 10^{-5}$; "Effort" is fishing angler days $\times 10^{-4}$; "Recoveries" is coded-wire tag recoveries expanded for sampling; "Survival Rate Index" is Recoveries/(Effort \times Released) relative to the maximum value observed (brood-year 2000).

	Brood Year					
	2000	2001	2002	2003	2004	2005
Released	11.23	13.78	13.11	7.41	13.13	13.71
Effort	9.88	6.71	10.10	8.00	7.45	4.30
Recoveries	1169	429	777	124	78	19
Survival Rate Index	1.00	0.44	0.56	0.20	0.08	0.03

(Fig. 19). Off central California (36°N), there was a only a brief period of upwelling in the early spring before sustained upwelling began around mid May. Moving northward along the coast, sustained upwelling began later: late May off Pt. Arena, early June near the California-Oregon border, and not until July in central Oregon (Fig. 18, see also Kosro et al. (2006)). In the north ($> 42^{\circ}\text{N}$) a delay in the advent of upwelling led to a lag in cumulative upwelling, which was made up for in the latter part of the year, leading to an average annual total. In the south, upwelling was lower than average all year, leading to a low annual total. The delay in upwelling in the north was associated with a southward shift of the jet stream, which led to anomalous winter-storm-like conditions (i.e., downwelling) (Sydeman et al., 2006; Barth et al., 2007). The delay in upwelling was not unprecedented, having occurred also in '83, '86, '88, '93 and '97.

Sea surface temperatures along the coast of central California were anomalously warm in May (Fig. 20), before becoming cooler than normal in the summer, coincident with strong, upwelling-inducing northwesterly winds. The mixed layer depth in the Gulf of the Farallones was shallower than normal in May and June in both 2005 and 2006 (Fig. 21). Warm sea surface temperatures, strong stratification, and low upwelling have been associated with poor survival of salmon during their first year in the ocean in previous studies (Pearcy, 1992).

A number of researchers observed anomalies in components of the California Current food web in 2005 consistent with poor feeding conditions for juvenile salmon. For example, gray whales appeared emaciated (Newell and Cowles, 2006); sea lions foraged far from shore rather than their usual pattern of foraging near shore (Weise et al., 2006); various fishes were at low abundance, including common salmon prey items such as juvenile rockfish and anchovy (Brodeur et al., 2006); Cassin's auklets on the Farallon Islands abandoned 100% of their nests (Sydeman et al., 2006); and dinoflagellates became the dominant phytoplankton group, rather than diatoms (MBARI, 2006). While the overall abundance of anchovies was low, they were captured in an unusually large fraction of trawls, indicating that they were more evenly distributed than normal. The anomalous negative effect on the nekton was also compiled from a variety of sampling programs (Brodeur et al., 2006) indicating some geographic displacement and reduced productivity of early

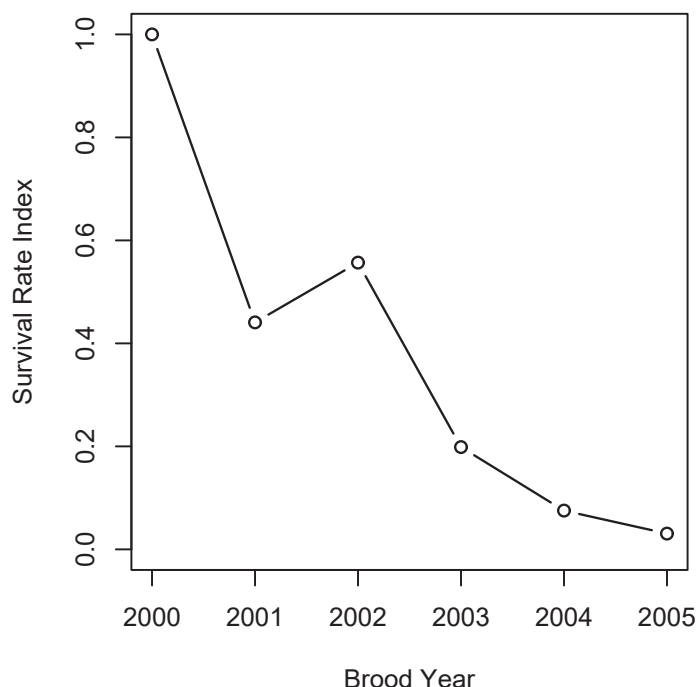


Figure 14: Index of FRH fall Chinook survival rate between release in San Francisco Bay and ocean age-2 based on coded-wire tag recoveries in the San Francisco major port area recreational fishery; brood-years 2000-2005. Survival rate index was derived as described in Table 6.

life stages. In central California, the abundance of young-of-the-year rockfishes was the lowest seen in the previous 22 years, even lower than the recent El Niño of 1998. Brodeur et al. (2006) noted that (1) “these changes are likely to affect juvenile stages and recruitment of many species (rockfishes, salmon, sardine) that are dependent on strong upwelling-based production,” and (2) the presence of unusual species not quantitatively sampled such as blue sharks, thresher sharks and albacore which “likely became important predators on juvenile rockfishes, salmon, and other forage fish species.” The latter adds the possibility of a top down influence of this event on nektonic species. To this list of potential predators might be added jumbo squid, which since 2003 have become increasingly common in the California Current (discussed in detail below).

Conditions in the coastal ocean were also unusual in the spring of 2006. Off central California (36°N), upwelling started in the winter, but slowed or stopped in March and April, before resuming in May. At 39°N, little upwelling occurred until the middle of April, but then it closely followed the average pattern. At 42°N, the start of sustained upwelling was delayed by about one month, but by the end of the upwelling season, more than the usual amount of water had been upwelled. At 45°N, the timing of upwelling was normal, but the intensity of both upwelling and downwelling winds was on average greater than normal. In late May and early June, upwelling slowed or ceased at each of the three northern stations.

In the Gulf of the Farallones region, northwest winds were stronger offshore

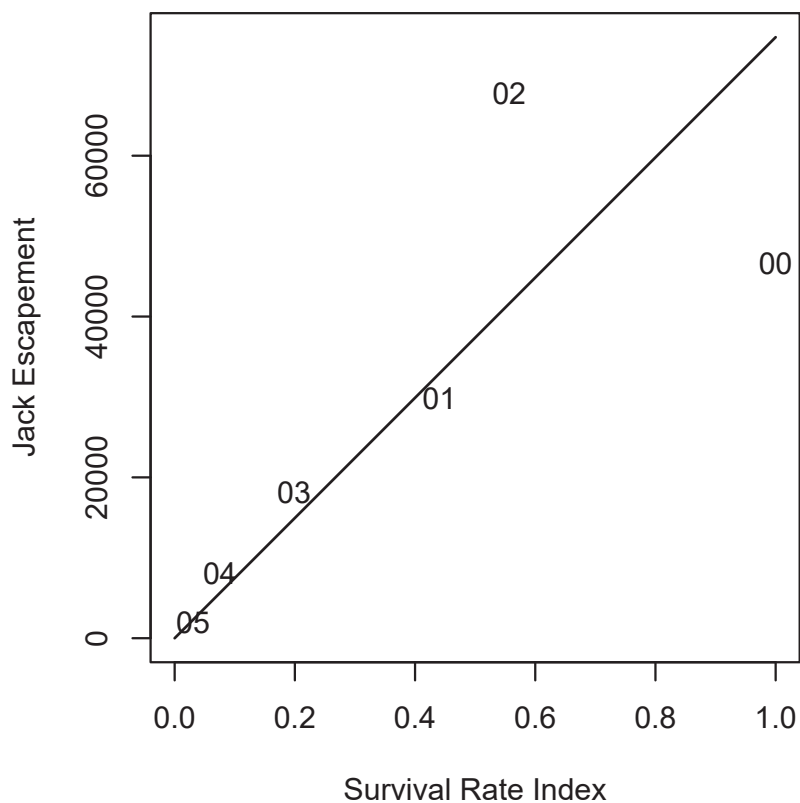


Figure 15: SRFC jack spawning escapement versus FRH fall Chinook survival rate index. Line is ratio estimate. Numbers in plot are last two digits of brood year; e.g., “05” denotes brood-year 2005 (jack return-year 2007). Line denotes ratio estimator fit to the data (through the origin with slope equal to average jack escapement/average survival rate index).

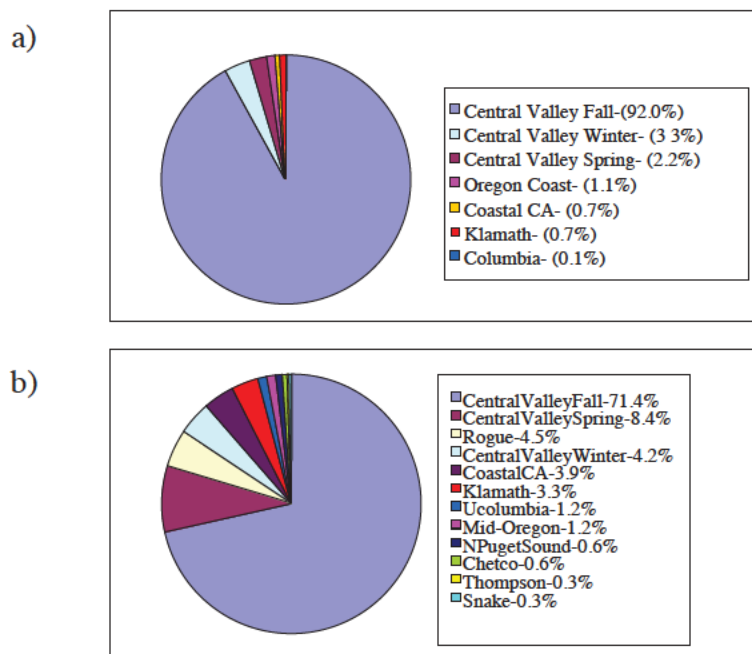


Figure 16: Composition of the Monterey Bay sport fishery landings as determined by genetic stock identification. Based on samples of 735 fish in 2006 and 340 fish in 2007. NMFS unpublished data.

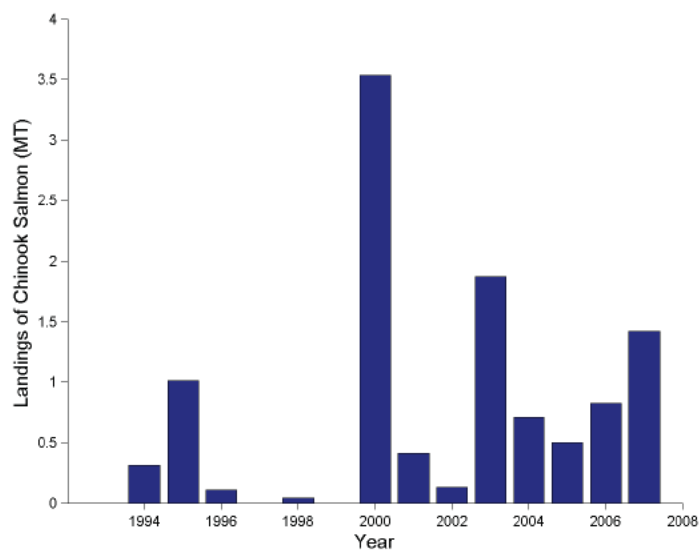


Figure 17: Landings of Chinook taken in trawl fisheries and landed at California ports. Data from the CALCOM database (D. Pearson, SWFSC, pers. comm.).

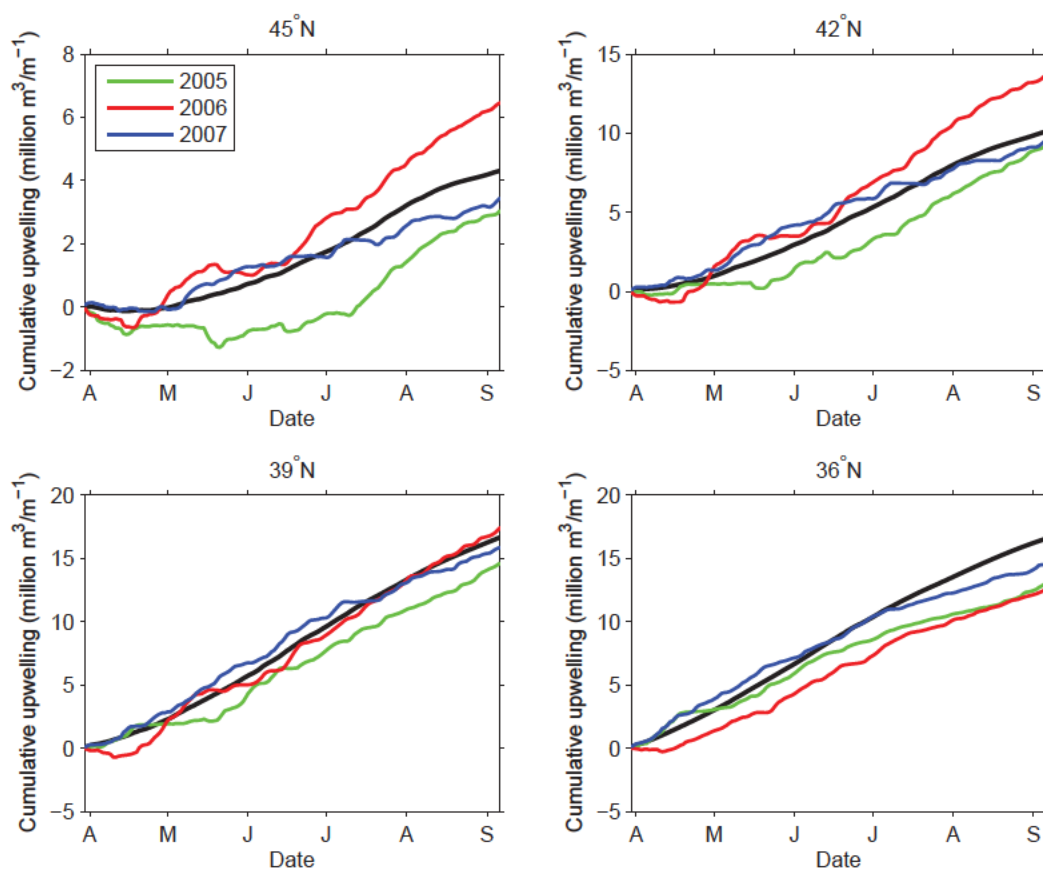


Figure 18: Cumulative upwelling at four locations along the California and Oregon coast; 45°N is near Lincoln City, Oregon; 42°N is near Brookings, Oregon, 39°N is near Pt. Arena, and 36°N is near Santa Cruz, California. Units are in millions of cubic meters per meter of shoreline. The black line represents the average cumulative upwelling at each location for the 1967-2008 period. Upwelling is indicated by increasing values of the upwelling index.

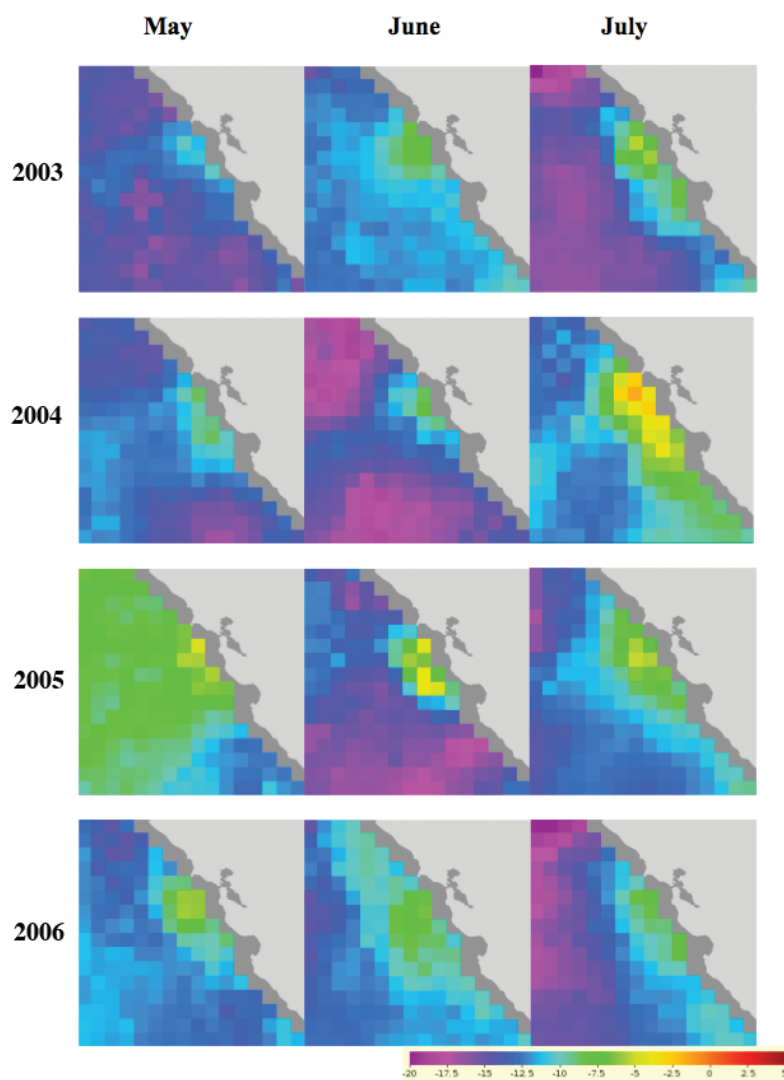


Figure 19: Strength of meridional winds (negative from the north) along the central California coast in 2003-2006. Note weak winds near the coast and in the Gulf of the Farallones in 2005 and 2006.

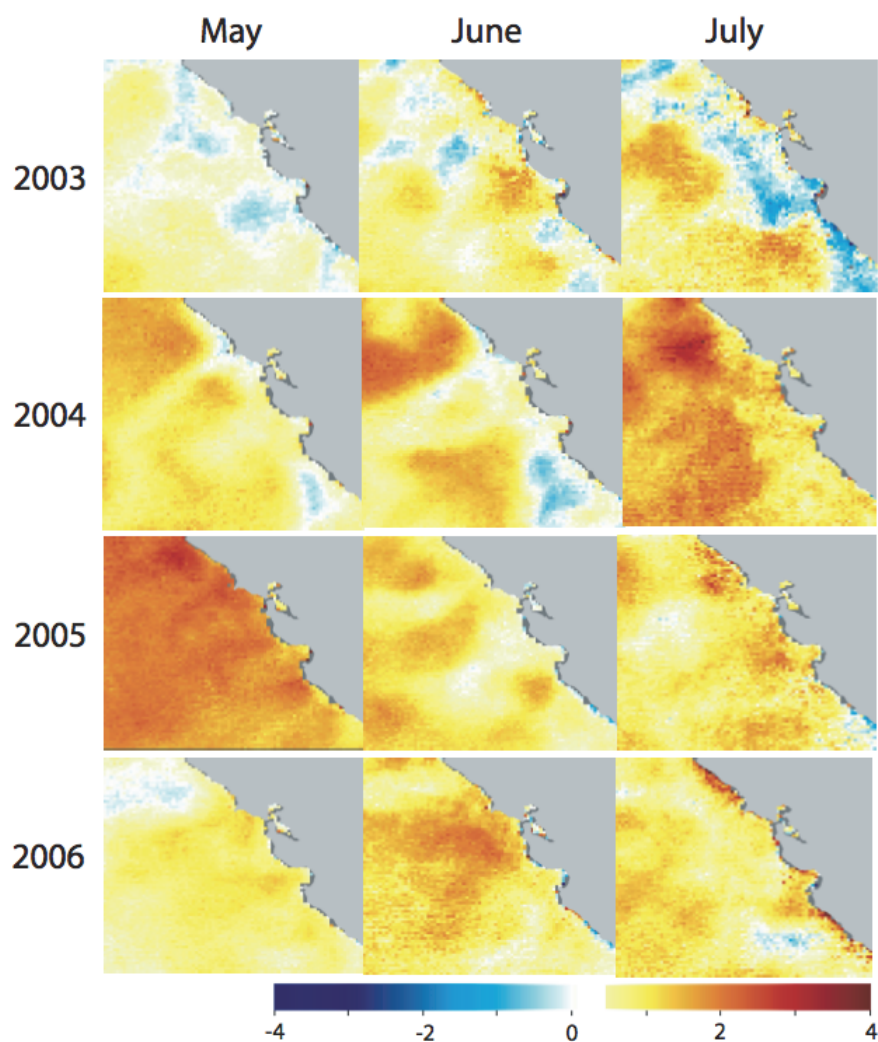


Figure 20: Sea surface temperature anomalies off central California in May (left), June (center) and July (right). Note especially warm temperatures in the Gulf of Farallones in May 2005 and June 2006, and warm temperatures along the coast in 2006. Data obtained from CoastWatch (<http://coastwatch.noaa.gov/>).

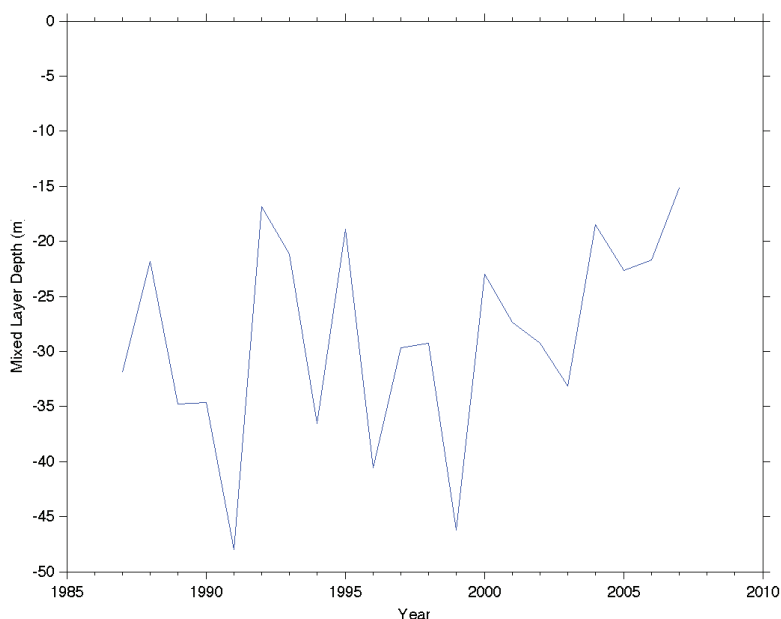


Figure 21: Average depth of the thermocline during May and June in the Gulf of the Farallones. NMFS unpublished data.

in 2006 than 2005, but were relatively weak near the coast between Pt. Reyes and Monterey Bay. At NMFS trawl survey stations in the Gulf of the Farallones, the mixed layer depth in May was the shallowest on record since 1987. Cassin's auklets again abandoned all their nests in 2006 (J. Thayer, PRBO, unpublished data), juvenile rockfish abundance was very low in the NMFS trawl survey, and anchovies were again encountered in a high fraction of trawls, even though overall abundance was low (NMFS unpublished data). While conditions in the spring of 2006 might not have been as unusual as 2005, it is important to realize that the pelagic ecosystem of the California Current is not created from scratch each year, but the animals in the middle and upper trophic levels (where salmon feed) have life spans longer than one year. This means that the food web will reflect past conditions for some time. Overall, it appears that the continuation of relatively poor feeding conditions in the spring of 2006, following on the poor conditions in 2005, contributed significantly to the poor survival of Sacramento River fall-run Chinook in their first year in the ocean

6.2 Were there any effects to these fish from the "dead zones" reported off Oregon and Washington in recent years?

Hypoxia in inner-shelf waters can extend from the bottom to within 12 m of the surface at certain times and places (Chan et al., 2008), but juvenile salmon are usually found in the upper 10 m of the water column and are capable of rapid movement, so are not expected to be directly impacted by hypoxic events. Furthermore, hypoxia

has not been observed on the inner shelf in California waters, where juvenile Chinook from the Central Valley are thought to rear. It is conceivable that outbreaks of hypoxia alter the distribution of Chinook, their prey, and their predators, but this seems an unlikely explanation for the poor performance of brood-year 2004 and 2005 Sacramento River fall-run Chinook.

6.3 *Were plankton levels depressed off California, especially during the smolt entry periods?*

Phytoplankton levels, based in remotely sensed observations of chlorophyll-a concentrations in the surface waters, were not obviously different in the spring and early summer of 2005 and 2006 compared to 2003 and 2004 (Fig. 22). Zooplankton are discussed in the answer to the first question in section 7.

6.4 *Was there a relationship to an increase in krill fishing worldwide?*

To date, there have been no commercial fisheries for krill in US waters; krill fishing in other parts of the world is unlikely to impact SRFC.

6.5 *Oceanography: temperature, salinity, upwelling, currents, red tide, etc.*

These issues are addressed in the response to question 1 in this section above, with the exception of red tides. Red tides are frequently caused by dinoflagellates (but can also be formed by certain diatom species). MBARI (2006; Fig. 23) reported that dinoflagellates in Monterey Bay have become relatively abundant since 2004, concurrent with increased water column stratification, reduced mixed layer depth and increased nitrate concentrations at 60 m depth. Increased stratification favors motile dinoflagellates over large diatoms which lack flagella, and thus diatoms are prone to sinking out of the photic zone when the upper ocean is not well-mixed.

6.6 *Were there any oil spills or other pollution events during the period of ocean residence?*

As discussed in the answer to question 6 of the section “Freshwater habitat area focus”, the cargo ship *Cosco Busan* spilled 58,000 gallons of bunker fuel into San Francisco Bay on 7 November 2007, and some of this fuel dispersed from the bay into the coastal ocean, eventually fouling beaches in San Francisco and Marin counties. This would have had the most impact on brood-year 2006 Chinook, some of which would have been in nearshore areas of the Gulf of the Farallones at that time. The actual effects of this spill on fish in the coastal ocean are unknown.

6.7 *Was there any aquaculture occurring in the ocean residence area?*

Aquaculture in California is generally restricted to onshore facilities or estuaries (e.g., Tomales Bay) where it is unlikely to impact salmonids from the Central Valley; we are unaware of any offshore aquaculture in California.

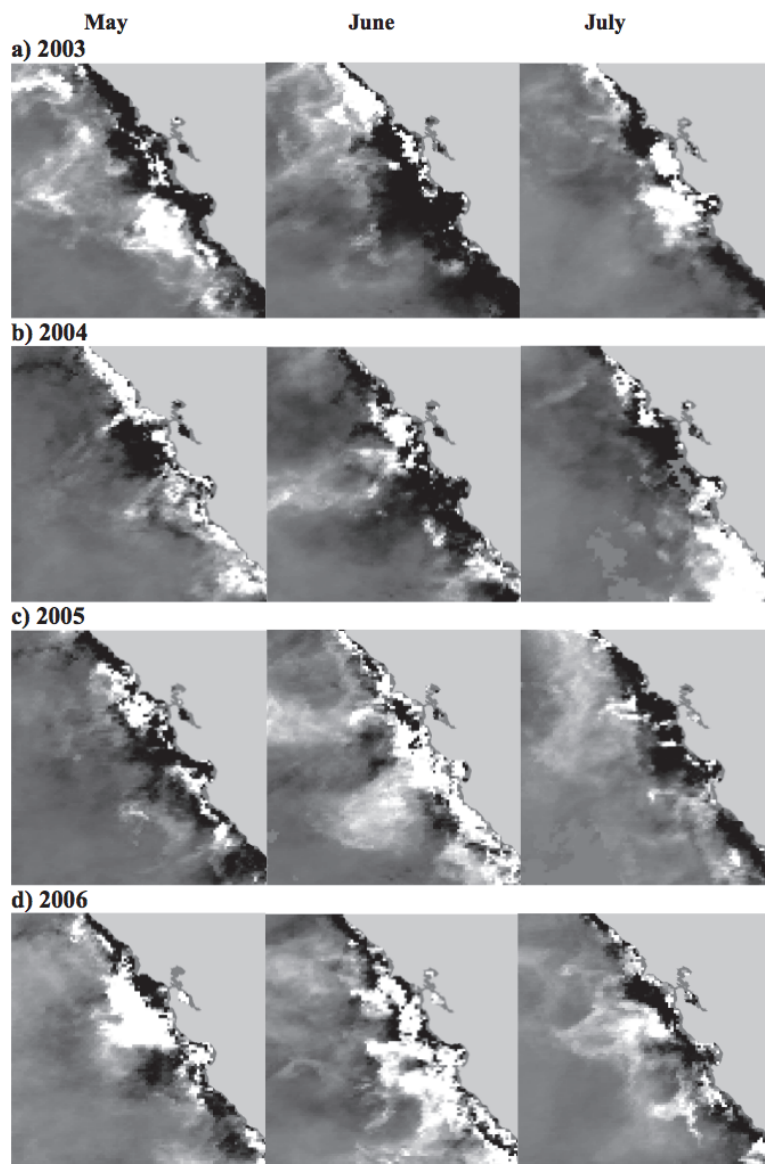


Figure 22: Chlorophyll-a (Chl-a) anomalies obtained from MODIS (CoastWatch) during May, June, and July. Black indicates low values and white high values. Anomalies represent monthly Chl-a concentrations minus mean Chl-a concentration values at the pixel resolution for the 1998-2007 period. From Wells et al. (2008).

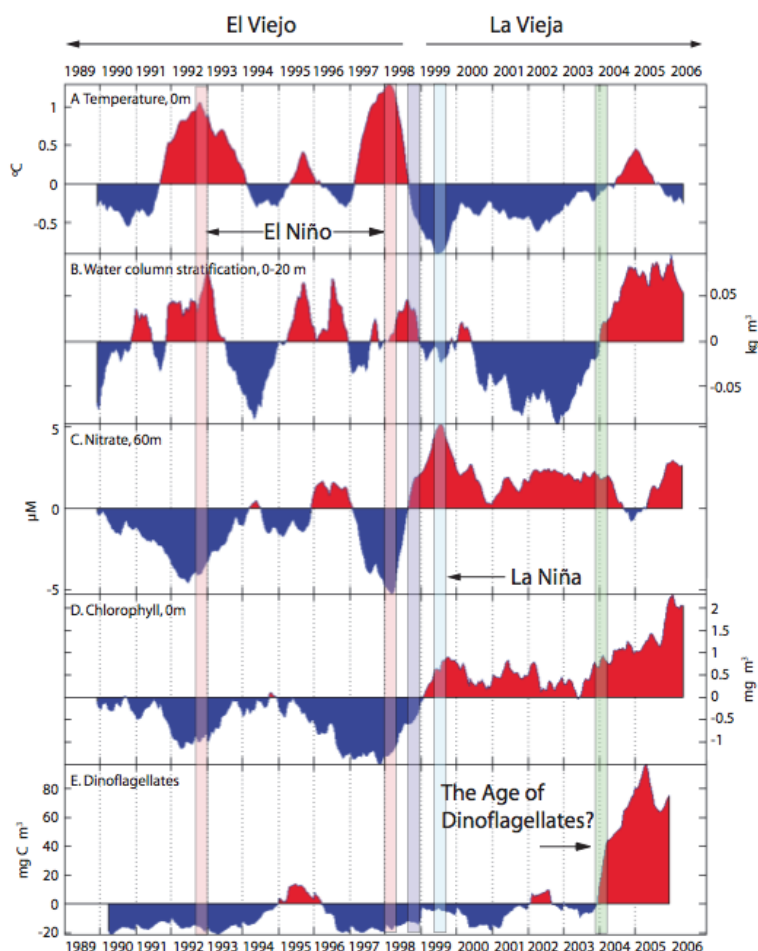


Figure 23: Time series of temperature, water column stratification, nitrate, chlorophyll and dinoflagellates observed in Monterey Bay. “El Viejo” refers to the warm-water regime lasting from 1976-1998, and “La Vieja” refers to the present regime. El Niño and La Niña events are indicated by the colored vertical bars spanning the subplots. Figure from MBARI (2006).

579 6.8 *Was there any offshore construction in the area of ocean residence, for wave*
 580 *energy or other purposes?*

581 A review of NMFS Endangered Species Act consultations indicate no significant
 582 offshore construction projects occurred during the time period of interest.

583 **7 Marine Species Interactions Focus**

584 7.1 *Were there any unusual population dynamics of typical food or prey species*
 585 *used by juvenile Chinook in marine areas? (plankton, krill, juvenile anchovy*
 586 *or sardines, etc.)*

587 Prey items of juvenile salmon, especially juvenile rockfish, were at very low abun-
 588 dance in 2005 (Brodeur et al. (2006), Fig. 24) and 2006. Catches of adult anchovies
 589 in midwater trawls conducted by NMFS exhibited an unusual pattern: the average
 590 catch in the Gulf of the Farallones was moderately low, but the frequency of en-
 591 counter (fraction of trawls with at least some anchovy) was higher than normal,
 592 indicating that the distribution of anchovy was less clustered than normal (Fig. 25).
 593 Sardines have been increasing since 2003, possibly indicating a shift in the Califor-
 594 nia Current to a state more favorable to warm-water species and less favorable to
 595 cold-water species such as salmon and anchovy.

596 Data are limited for krill, but it appears that krill abundance was fairly normal
 597 in the spring of 2005 (Fig 26a and b), but krill were distributed more evenly than in
 598 2002-2004, which may have made it harder for salmon to find high concentrations
 599 of krill upon which to feed. In spring 2006, krill abundance was very low in the
 600 Gulf of the Farallones (Fig. 26c).

601 7.2 *Was there an increase in bird predation on juvenile salmonids caused by a*
 602 *reduction in the availability of other forage food?*

603 Among the more abundant species of seabirds, common murre (*Uria aalge*) and
 604 rhinoceros auklets *Cerorhinca monocerata* eat juvenile salmon (Fig. 27; Roth et al.
 605 (2008); Thayer et al. (2008)) . In 2005 and 2006, chicks of these species in the
 606 Gulf of the Farallones, the initial ocean locale of juvenile Chinook from the Central
 607 Valley, had juvenile salmon in their diet at 1-4% for rhinoceros auklets and 7-10%
 608 for murre. This represented a smaller than typical contribution to stomach contents
 609 for auklets, and a larger than typical proportion for murre during the 1972-2007
 610 time period (calculated from data in Fig. 27; Bill Sydeman, Farallon Institute for
 611 Advanced Ecosystem Research, Petaluma, California, unpublished data).

612 The rhinoceros auklet population in the Gulf of the Farallones has remained
 613 stable at about 1,500 birds for the past 20 years, but murre numbers have doubled
 614 between the 1990s and 2006 to about 220,000 adults (Bill Sydeman, Farallon Insti-
 615 tute for Advanced Ecosystem Research, Petaluma, California, personal communi-
 616 cation). A study in 2004 found that murre in the Gulf of the Farallones consumed
 617 about four metric tons of juvenile salmon (Roth et al., 2008). This represents the

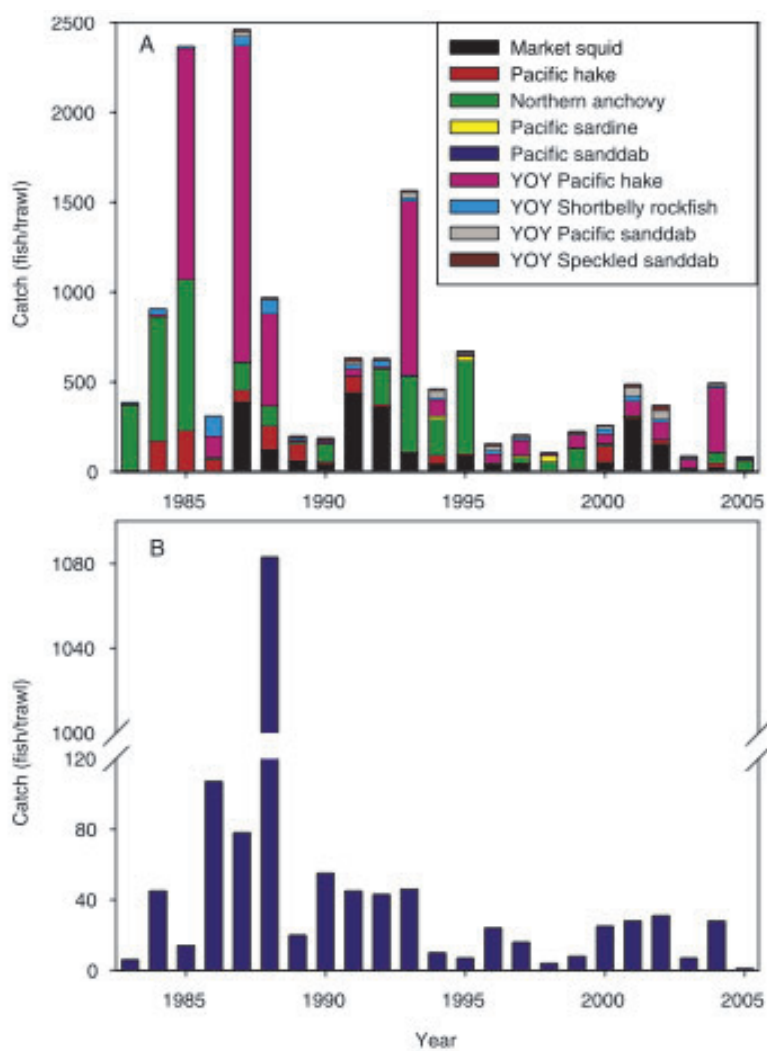


Figure 24: Time series of catches from pelagic trawl surveys along the central California coast from 1983 to 2005 for (a) the dominant nekton species and (b) juvenile rockfishes. From Brodeur et al. 2006.

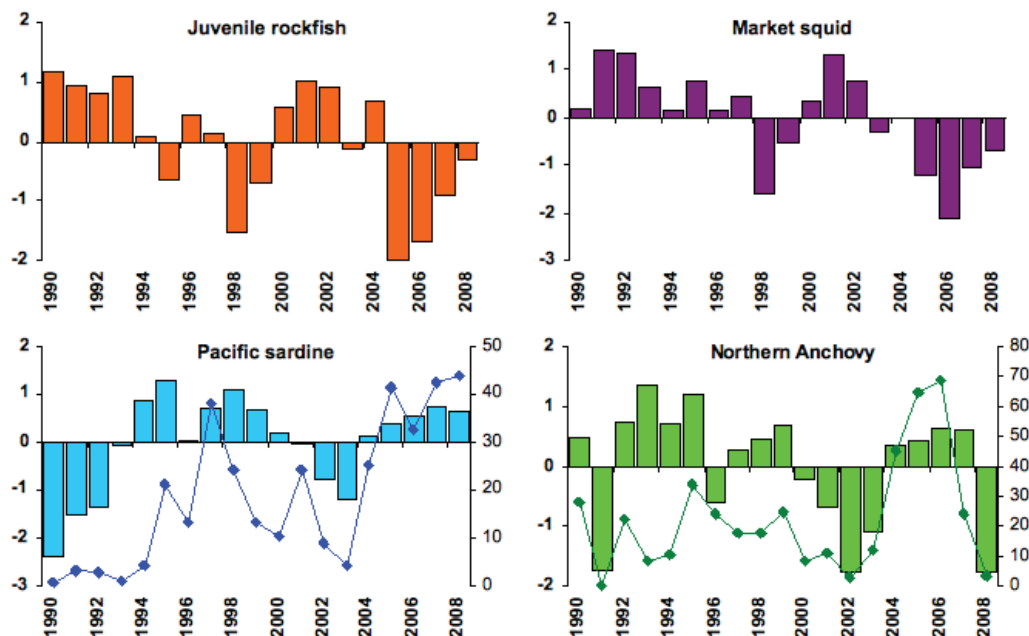


Figure 25: Standardized abundances (bars) of four Chinook salmon prey items (the ten most frequently encountered rockfish of the NOAA trawl survey, market squid, sardines and anchovies) estimated from the mid-water trawl survey conducted by NOAA Fisheries, Santa Cruz. Lines indicate the frequency of occurrences of sardines and northern anchovy in the trawls.

equivalent of about 20,000 to 40,000 juvenile Chinook salmon (100-200 g each). Although a greater proportion of murre stomach contents were salmon in 2005 and 2006 than in 2004, considering that >30 million juvenile salmon entered the ocean each year, this increase could not account for the poor survival of the 2004 and 2005 broods.

7.3 Was there an increase of marine mammal predation on these broods?

Among marine mammals, killer whales (*Orcinus orca*), California sea lions (*Zalophus californianus*), and harbor seals (*Phoca vitulina*) are potential predators on salmon (Parsons et al., 2005; Weise and Harvey, 2005; Ford and Ellis, 2006; Zamon et al., 2007). A coast-wide marine mammal survey off Washington, Oregon, and California conducted in 2005 to 550 km offshore reported cetacean abundances similar to those found in the 2001 survey (K. Forney, NMFS, unpublished data). In coastal waters of California during July 2005 the population estimate for killer whales was 203, lower than abundance estimates from surveys in 1993, 1996, and 2001 (Barlow and Forney, 2007) (Fig. 28).

Of five recognized killer whale stocks within the Pacific U.S. Exclusive Economic Zone, the Eastern North Pacific Southern Resident stock has been most implicated in preying on salmon. This stock resides primarily in inland waters of Washington state and southern British Columbia, but has been observed as far south

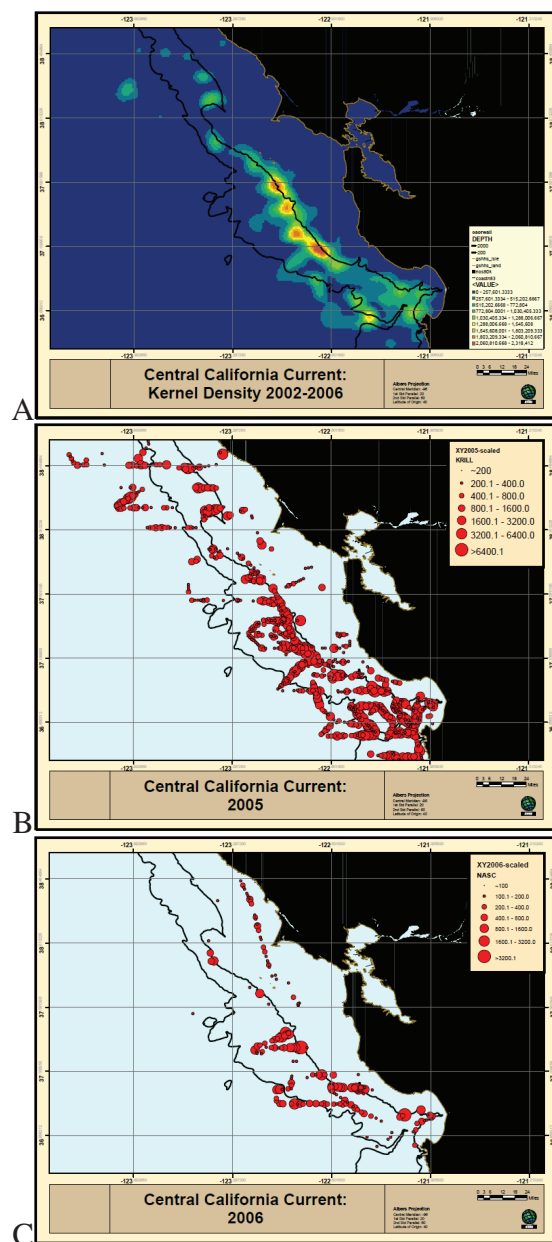


Figure 26: Abundance of krill measured by echosounder during May-June survey cruises off central California in 2004-2006. A) Average abundance of krill over the survey period. B) Abundance of krill in 2005 and C) 2006. Unpublished data of J. Santora.

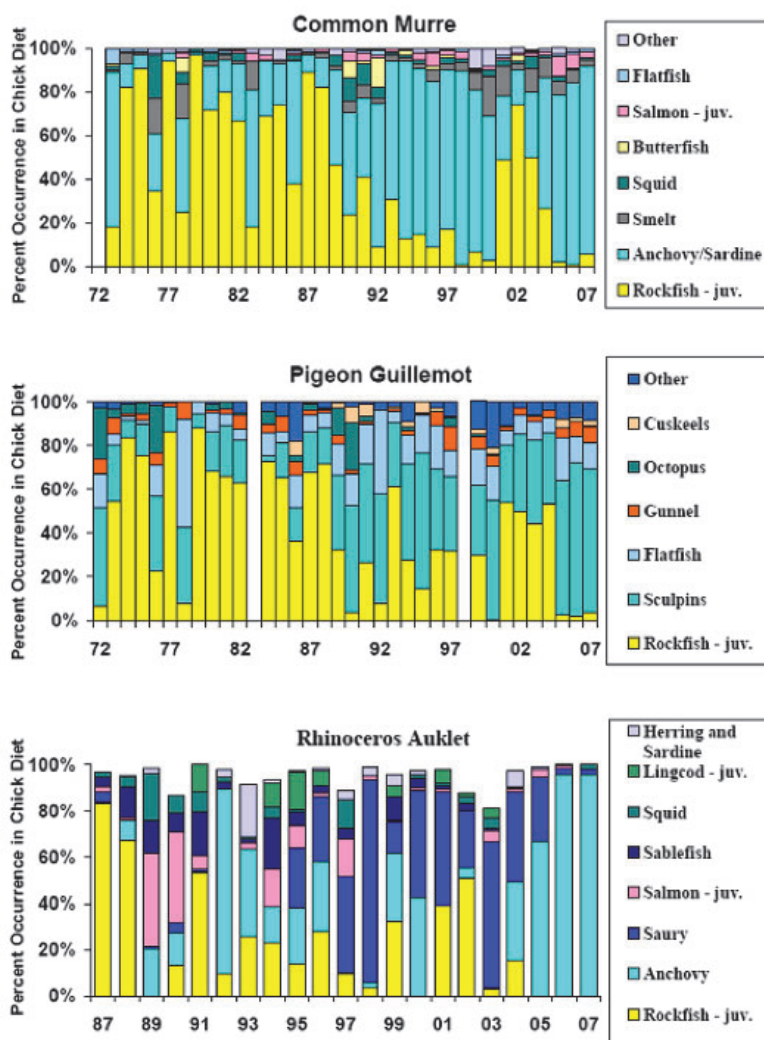


Figure 27: Diet of three species of seabirds in the Gulf of the Farallones between 1972 and 2007. (Source: Bill Sydeman, Farallon Institute for Advanced Ecosystem Research)

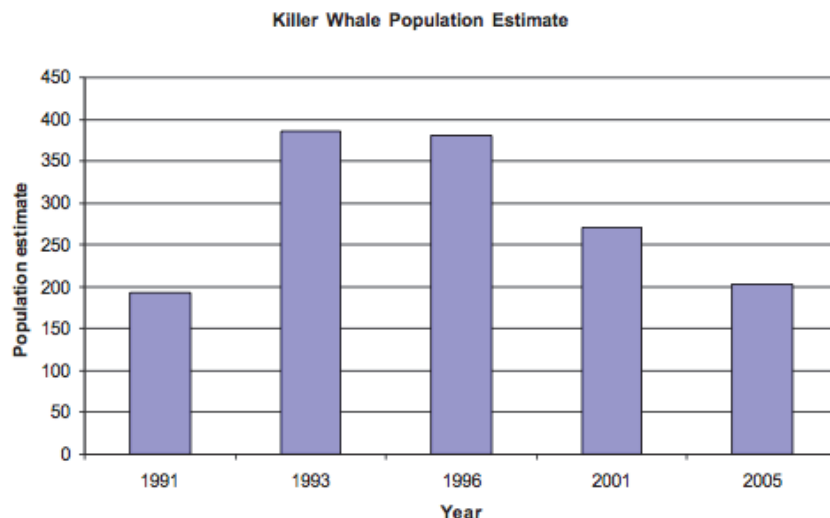


Figure 28: Population estimates of killer whales (*Orcinus orca*) off the California coast (to 300 nautical miles). Source: Barlow and Forney (2007).

as Monterey Bay. This population increased in abundance between 1984 and 1996, then experienced a decline to 2001. Since 2001, the numbers have increased but not to levels seen in the mid-1990s (Carretta et al., 2007). Considering population trends and absolute abundance estimates, this stock does not appear to be significant cause of the poor survival of the 2004 and 2005 broods.

Sea lion population trends reveal a steady increase in numbers on the California coast between 1975 and 2005 (Fig. 29) (Carretta et al., 2007). Over this period, sea lions have taken an increasing percentage of Chinook hooked in commercial and recreational fisheries (Weise and Harvey, 2005). The results of data analysis following the 2005 survey determined that the population had reached carrying capacity in 1997; thus, no significant increase in sea lion numbers in 2005 occurred. Weise et al. (2006) observed that sea lions were foraging much farther from shore in 2005, which suggests that they had a lower than usual impact on salmon in that year.

As with sea lions, harbor seal abundance appears to have reached carrying capacity on the West Coast (Fig. 30) (Carretta et al., 2007). Seal populations experienced a rapid increase between 1972 and 1990. Since 1990, the population has remained stable through the last census in 2004. Because SRFC achieved record levels of abundance during the recent period of high harbor seal abundance, it is unlikely that harbor seals caused the poor survival of the 2004 and 2005 broods.

7.4 Was there predation on salmonids by Humboldt squid?

Jumbo squid (*Dosidicus gigas*) are an important component of tropical and subtropical marine ecosystems along the Eastern Pacific rim, and in recent years have expanded their range significantly poleward in both hemispheres. In the California Current, these animals were observed in fairly large numbers during the 1997-1998

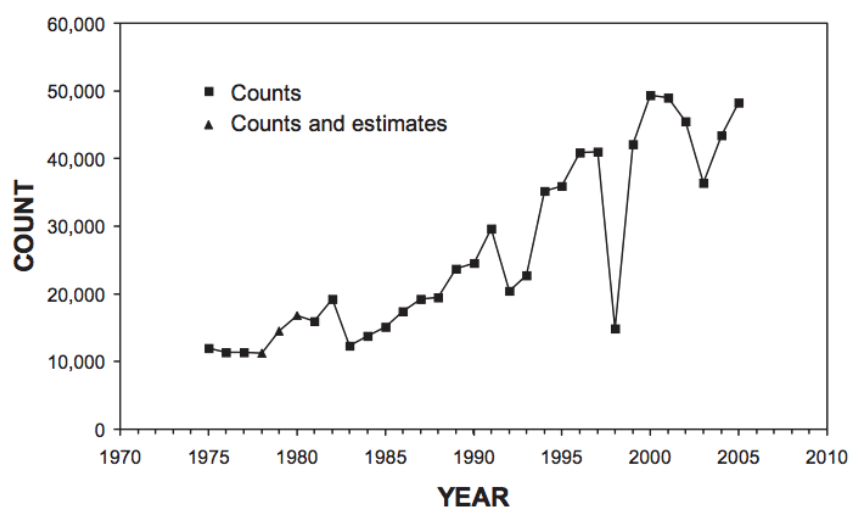


Figure 29: Count of California sea lion pups (1975-2005). Source: Carretta et al. (2007)

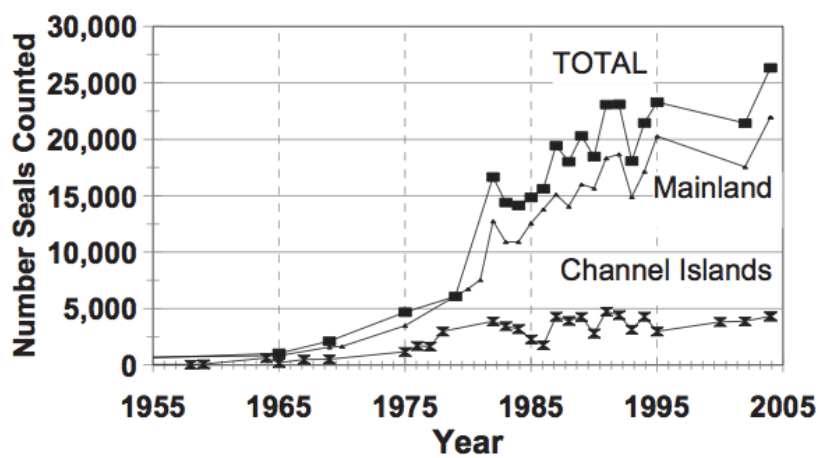


Figure 30: Harbor seal haulout counts in California during May and June (Source: Carretta et al. 2007)

El Niño, and since 2003 they have been regularly encountered by fishermen and researchers throughout the West Coast of North America as far north as Southeast Alaska. While the primary drivers of these range expansions remain uncertain, climate-related mechanisms are generally considered the most likely, and some evidence suggests that an ongoing expansion of the oxygen minimum zone (OMZ) in the California Current could be a contributing factor (Bograd et al., 2008). Although accounts of squid off of Southeast Alaska consuming salmon have been reported, ongoing monitoring of food habits from squid collected off of California (with limited sampling in Oregon) since 2005 have failed to document any predation on salmonids. While salmon smolts are clearly within the size range of common squid prey, their distribution (generally inshore of the continental shelf break) likely overlaps very little with the distribution of squid (generally offshore of the continental shelf break), and predation on older salmon is probably unlikely given their swimming capabilities relative to other prey.

In a sample of 700 jumbo squid stomachs collected in California waters, the most frequent prey items have been assorted mesopelagic fishes, Pacific hake, northern anchovy, euphausiids, Pacific sardine, several species of semi-pelagic rockfish (including shortbelly, chilipepper, widow and splitnose rockfish) and other squids (Field et al., 2007). The size of prey items ranges from krill to fishes of sizes up to 45 centimeters, however most of the larger fishes (and squids) consumed by squid can probably be considered relatively weak swimmers (Pacific hake, rockfish, Pacific ratfish). Although squid have also been reported to strike larger salmon, rockfish, sablefish and other species that have been hooked on fishing lines, predation on larger prey items that may be swimming freely seems unlikely. Similarly, squid caught in purse seines in the Eastern Tropical Pacific will often attack skipjack and yellowfin tuna schools, while predation by free-swimming squids appears to be limited almost exclusively to mesopelagic fishes and invertebrates (Olson et al., 2006). However, the impacts of jumbo squid on fisheries could possibly be more subtle than direct predation alone, as recent research conducted during hydroacoustic surveys of Pacific hake in the California Current has suggested that the presence of squid may lead to major changes in hake schooling behavior, confounding the ability to monitor, assess, and possibly manage this important commercial resource (Holmes et al., 2008). Although unlikely, it is plausible that the presence of squid could result in changes in the behavior of other organisms (such as salmon or their prey or other predators) as well, even in the absence of intense predation.

The absolute abundance of squid in the California Current in recent years is an important factor in assessing the potential impacts of predation, yet this is entirely unknown. However, the total biomass could potentially be quite large based on the significance of squid in the diets of some predators (such as mako sharks, for which jumbo squid appear to be the most important prey in recent years), the frequency of squid encounters and catches during recreational fishing operations and scientific surveys, and the magnitude of catches in comparable ecosystems. For example, in recent years jumbo squid landings in similar latitudes in the Southern Hemisphere have grown from nearly zero to over 200,000 tons per year.

Although it is impossible to conclusively rule out squid predation as a primary

cause of the poor survival of the 2004 and 2005 broods of SRFC, it is unlikely that squid predation is a major contributing factor. Instead, the large numbers of jumbo squid observed since 2003, and particularly during 2005-2006, may have been a reflection of the same unusual ocean conditions (poor upwelling, heavy stratification, warm offshore water, poor juvenile rockfish and seabird productivity, etc) that contributed to the poor feeding conditions for salmon during those years.

7.5 Was there increased predation on salmonids by other finfish species (e.g., lingcod)?

Predation is typically considered to be a major source of salmon mortality, particularly during ocean entry (Pearcy, 1992). Seabirds and marine mammals (addressed in section 7.3) are often considered the greatest sources of salmon smolt and adult predation mortality, respectively. In general, available food habits data do not indicate that groundfish or other fishes are substantial predators of either juvenile or adult salmon, although as Emmett and Krutzikowsky (2008) suggest, this could be in part due to biases in sampling methodologies. As very little data are available for piscivorous predators in the Central California region, we summarize examples of those species of groundfish that could potentially have an impact on Pacific salmon based on existing food habits data, much of which was collected off of the Pacific Northwest, and briefly discuss relevant population trends for key groundfish species. However, it is unlikely that any are at sufficiently high population levels, or exhibit sufficiently high predation rates, to have contributed to the magnitude of the 2008 salmon declines.

Pacific hake (*Merluccius productus*) are by far the most abundant groundfish in the California Current, and are widely considered to have the potential to drive either direct or indirect food web interactions. However, despite numerous food habits studies of Pacific hake dating back to the 1960s, evidence of predation on salmon smolts is very limited, despite strong predation pressure on comparably sized forage fishes such as Pacific sardines, northern anchovies and Pacific herring. Emmet and Krutzikowsky (2008) found a total of five Chinook (four of which were ocean entry year fish, one of which was age one) in six years of monitoring predator abundance and food habits near the mouth of the Columbia river. As the population of Pacific hake is substantial, their extrapolation of the potential impact to salmon populations suggested consumption of potentially millions of smolts during years of high hake abundance, although the relative impact to the total number of smolts in the region (on the order of 100 million per year) was likely to be modest (albeit uncertain). Jack mackerel (*Trachurus symmetricus*) were another relative abundant predator with limited predation on salmon in their study, and Pacific mackerel (*Scomber japonicus*) have also been implicated with inflicting significant predation mortality on outmigrating salmon smolts at some times and places (Ashton et al., 1985).

In nearshore waters, examples of piscivores preying upon salmonids are relatively rare. Brodeur et al. (1987) found infrequent but fairly high predation on salmon smolts (both Chinook and coho) from black rockfish (*Sebastes melanops*)

collected from purse-seine studies off of the Oregon coast in the early 1980s, but no other rockfish species have been documented to prey on salmonids. Cass et al. (1990) included salmon in a long list of lingcod prey items in Canadian waters, but studies in California have not encountered salmon in lingcod diets and there is no evidence that lingcod are a significant salmon predator. In offshore waters, sablefish (*Anoplopoma fimbria*) are one of the most abundant higher trophic level groundfish species, however with the exception of trace amounts of *Oncorhynchus* sp. reported by Buckley et al. (1999), several other sablefish food habits studies in the California Current have not reported predation on salmonids. Salmon have also been noted as important prey of soupfin sharks (*Galeorhinus galeus*) in historical studies off of Washington and California. Larger salmon have also been noted in the diets of sleeper sharks, and presumably salmon sharks (*Lamna ditropis*) are likely salmon predators when they occur in the California Current. However, none of these species are likely to be sufficiently abundant, nor were reported to be present in unusual numbers, throughout the 2005-2006 period.

Population turnover rates for most groundfish species are typically relatively low, and consequently it is unlikely that short term fluctuations in the relative abundance of predatory groundfish could make a substantive short-term impact on salmon productivity. However, many groundfish population in the California Current have experienced significant to dramatic changes in abundance over the past decade, a consequence of both reduced harvest rates and dramatically successful recruitment observed immediately following the 1997-98 El Niño. Specifically, for most stocks in which recruitment events are reasonably well specified, the 1999 year class was estimated to be as great or greater than any recruitment over the preceding 15 to 20 years (Fig. 31). For example, the 1999 bocaccio (*Sebastes paucispinis*) year class was the largest since 1989, resulting in a near doubling of stock spawning biomass between 1999 and 2005 (MacCall, 2006). Similarly, the 1999 Pacific hake year class was the largest since 1984, which effectively doubled the stock biomass between 2000 and 2004 (Helser et al., 2008). Lingcod, cabezon, sablefish, most rockfish and many flatfish also experienced strong year classes, resulting in a doubling or even tripling in total biomass between 1999 and 2005 for many species. There is growing evidence that many of these species also experienced a strong 2003 year class, although the relative strength may not have been as great as the 1999 event. Biomass trends for jack mackerel are unknown but there is no evidence of recent, dramatic increases; the Pacific mackerel biomass has been increasing modestly in recent years based on the latest assessment, but is still estimated to be far below historical highs.

These population trends could potentially have increased the abundance, and therefore predation rates, on salmon by some of these species. However, all of these species are considered to still be at levels far below their historical (unfished) abundance levels, and many have again shown signs of population decline (Pacific hake and sablefish) heading into the 2005-2006 period. For Pacific hake, the distributional overlap of larger hake with salmon smolts is likely to be much less than that off of the Columbia River, particularly in warm years when adult hake tend to be distributed further north. In the absence of any evidence for unusual distribution

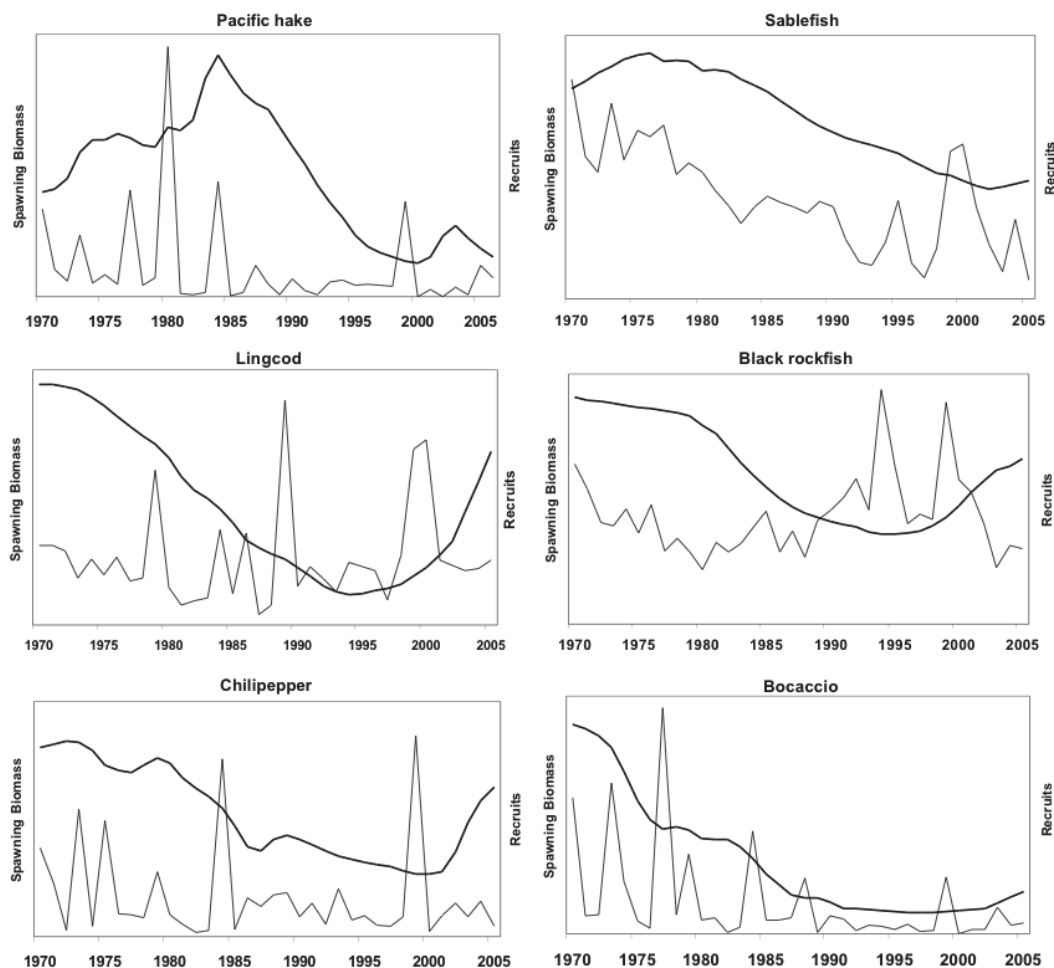


Figure 31: Spawning biomass (black line) and recruitment (light gray line) of selected groundfish species off of central California.

or behavior of these stocks, it is difficult to envision a mechanism by which these species could have inflicted any more than modest changes in predation mortality rates for Pacific salmon in recent years.

8 Cumulative Ecosystem Effects Focus

8.1 Were there other ecosystem effects? Were there synergistic effects of significant factors?

These questions are addressed in the main text.

9 Salmon Fisheries Focus

9.1 To what extent did fisheries management contribute to the unusually low SRFC spawning escapements in 2007 and 2008?

While the evidence clearly indicates that the weak year-class strength of the 2004 and 2005 broods was well established by ocean age-2, prior to fishery recruitment, the question nevertheless arises, to what extent did ocean and river fisheries contribute to the unusually low SRFC spawning escapements in 2007 and 2008? SRFC contribute to fishery harvest and spawning escapement primarily as age-3 fish, and thus the 2004 and 2005 broods primarily contributed to the 2007 and 2008 escapements, respectively, which in turn were primarily impacted by the 2007 and 2008 fisheries, respectively.

Ocean fishery management regulations are developed anew each year by the PFMC with the aim of meeting, in expectation, the annual conservation objectives for all stocks under management. For SRFC, the annual conservation objective is a spawning escapement of 122,000–180,000 adults (hatchery plus natural area spawners). The PFMC uses mathematical models to forecast SRFC expected spawning escapement as a function of the stock's current ocean abundance and a proposed set of fishery management regulations.

For 2007, the PFMC forecast SRFC expected spawning escapement as

$$E_{SRFC} = CVI \times (1 - h_{CV}) \times p_{SRFC} \quad (1)$$

based on forecasts of the three right-hand side quantities. The Central Valley Index (CVI) is an annual index of ocean abundance of all Central Valley Chinook stocks combined, and is defined as the calendar year sum of ocean fishery Chinook harvests in the area south of Point Arena, California, plus the Central Valley adult Chinook spawning escapement. The CV harvest rate index (h_{CV}) is an annual index of the ocean harvest rate on all Central Valley Chinook stocks combined, and is defined as the ocean harvest landed south of Point Arena, California, divided by the CVI . Finally, p_{SRFC} is the annual proportion of the Central Valley adult Chinook combined spawning escapement that are Sacramento River fall Chinook. The model above implicitly assumed an average SRFC river fishery harvest rate for 2007, which was appropriate given that the fishery was managed under the normal set of regulations.

The model used to forecast the 2007 CVI is displayed in Figure 32. Based on the previous year's Central Valley Chinook spawning escapement of 14,500 jacks, the 2007 CVI was forecast to be 499,900 (PFMC, 2007a). The harvest rate index, h_{CV} , was forecast as the sum of the fishery-area-specific average harvest rate indices observed over the previous five years, each scaled by the respective number of days of fishing opportunity in 2007 relative to the average opportunity over the previous five years. The 2007 h_{CV} was forecast to be 0.39. The 2007 SRFC spawning proportion, p_{SRFC} , was forecast to be 0.87; the average proportion observed over the previous five years. Thus, the 2007 SRFC adult spawning escapement was

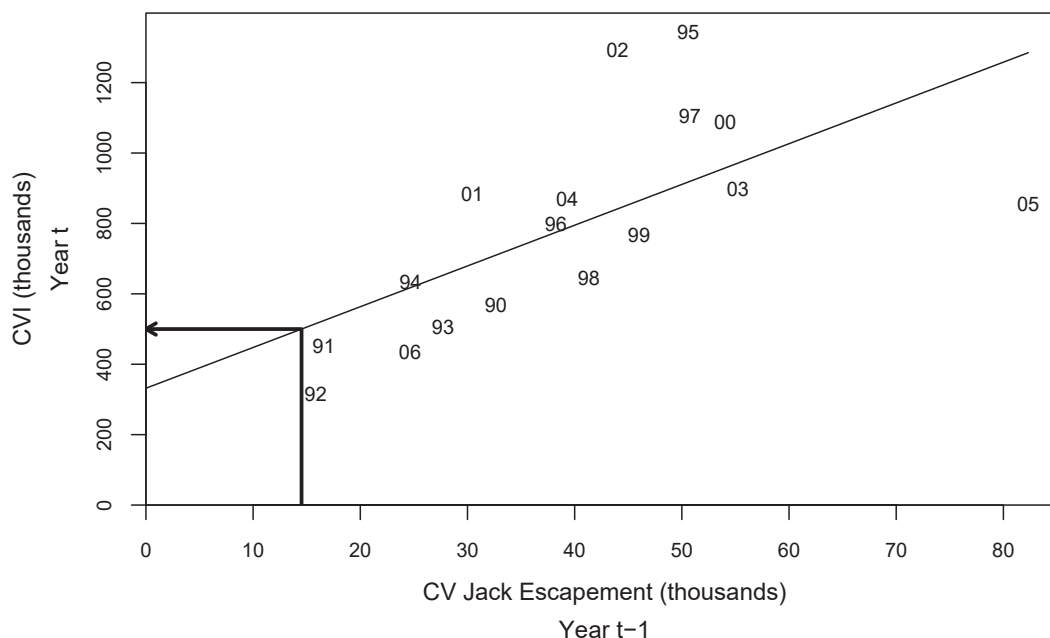


Figure 32: PFMC 2007 *CVI* forecast regression model. Numbers in plot are last two digits of *CVI* year; e.g., “92” denotes *CVI* year 1992. Arrow depicts *CVI* prediction of 499,900 based on the 2006 Central Valley Chinook spawning escapement of 14,500 jacks.

842 forecast to be (PFMC, 2007b)

$$E_{SRFC} = 499,900 \times (1 - 0.39) \times 0.87 = 265,500; \quad (2)$$

843 exceeding the upper end of the escapement goal range.

844 The 2007 realized values of the *CVI*, h_{CV} , p_{SRFC} , and E_{SRFC} are displayed
 845 alongside their forecast values in Table 7. The errors of all three model compo-
 846 nent forecasts contributed to the over-optimistic E_{SRFC} forecast. Ocean harvest of
 847 Chinook salmon generally off California was about one-third of the previous ten-
 848 year average in both the commercial and recreational fisheries, and the CPUE in
 849 the recreational fishery was the lowest observed in the previous 25 years (PFMC,
 850 2008d). However, the *CVI* was also the lowest on record so that h_{CV} was higher
 851 than forecast, although within the range of variation to be expected. The realized
 852 river fishery harvest rate was 0.14 (O’Farrell et al., 2009), which closely matched
 853 the average rate implicitly assumed by the E_{SRFC} forecast model. The realized
 854 p_{SRFC} was the lowest observed over the previous 20 years, resulting from the low
 855 escapement of SRFC in 2007 combined with the relatively level escapements of the
 856 other runs of Central Valley Chinook (late-fall, winter, spring) as discussed earlier
 857 in this report. The most significant forecast error, however, was of the *CVI* itself.
 858 Had the *CVI* forecast been accurate and fishing opportunity further constrained
 859 by management regulation in response, so that the resulting h_{CV} was reduced by
 860 half, the SRFC escapement goal would have been met in 2007. Thus, fishery man-
 861 agement, while not the cause of the weakness of the 2004 brood, contributed to
 862 the SRFC escapement goal not being achieved in 2007, primarily due to an over-

Table 7: PFMC 2007 SRFC spawning escapement prediction model components: forecast and realized values. *Ratio = Realized ÷ Forecast.*

2007	Forecast	Realized	Ratio
<i>CVI</i>	499,900	232,700	0.47
<i>h_{CV}</i>	0.39	0.48	1.23
<i>p_{SRFC}</i>	0.87	0.73	0.84
<i>E_{SRFC}</i>	265,500	87,900	0.33

optimistic forecast of the strength of the 2004 brood.

The 2007 SRFC escapement of jacks was the lowest on record (1,900 fish), significantly lower than the 2006 jack escapement (8,000 fish), which itself was the record low at that time. These back-to-back SRFC brood failures and the over-optimistic 2007 forecast of E_{SRFC} prompted a thorough review of the data and methods used to forecast E_{SRFC} prior to the development of fishery management regulations for 2008 (PFMC, 2008a,b). The review findings included the following recommendations: (1) the E_{SRFC} model components should all be made SRFC-specific, if possible; (2) SRFC ocean harvest north of Point Arena, California, to Cape Falcon, Oregon, and SRFC river harvest should be explicitly accounted for in the model; and (3) inclusion of the 2004 record high jack escapement data point in the ocean abundance forecast model results in overly-optimistic predictions at low jack escapement levels; it should be omitted from the model when making forecasts at the opposite end of the scale.

Following these recommendations, the methods used to forecast E_{SRFC} in 2008 were revised as follows (PFMC, 2008b). First, historical SRFC coded-wire tag recovery data in ocean salmon fisheries were used to develop estimates of SRFC ocean harvest in all month-area-fishery strata south of Cape Falcon, Oregon, for years 1983–2007. Second, Sacramento River historical angler survey data was used to develop estimates of SRFC river harvest for years in which these surveys were conducted (1991–1994, 1998–2000, 2002, 2007). Third, a SRFC-specific annual ocean abundance index, the *Sacramento Index (SI)* was derived by summing SRFC ocean harvest from September 1, year $t - 1$ through August 31, year t and SRFC adult spawning escapement, year t ¹. The fall year $t - 1$ through summer year t accounting of ocean harvest better reflects the period during which ocean fishery mortality directly impacts the year t spawning escapement of SRFC, given the late-summer / early-fall run timing of the stock. Fourth, an SRFC-specific ocean harvest rate index, $h_{SRFC,o}$, was defined as the SRFC harvest divided by the *SI*. Fifth, an SRFC-specific river harvest rate, $h_{SRFC,r}$ was defined as the SRFC river harvest divided by the SRFC river run (harvest plus escapement). Sixth, a new E_{SRFC} forecast model was constructed based on these quantities as (Mohr and O’Farrell, 2009)

$$E_{SRFC} = SI \times (1 - h_{SRFC,o}) \times (1 - h_{SRFC,r}) / (1 - h_{SRFC,r}^*), \quad (3)$$

¹the *SI* has since been modified to include SRFC adult river harvest as well for assessments beginning in 2009 (O’Farrell et al., 2009).

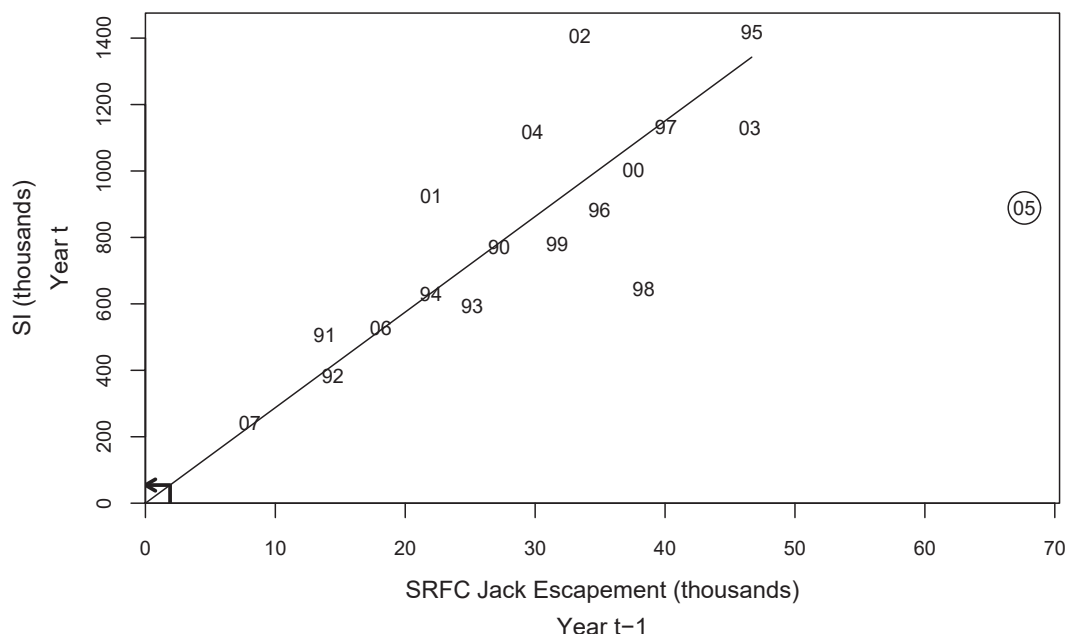


Figure 33: PFMC 2008 *SI* forecast regression model. Numbers in plot are last two digits of *SI* year; e.g., “07” denotes *SI* year 2007. Circled data point (*SI* year 2005) omitted from model. Arrow depicts *SI* prediction of 54,600 based on the 2007 SRFC spawning escapement of 1,900 jacks.

where $h_{SRFC,r}^*$ is the SRFC river harvest rate expected under normal management regulations. The PFMC used this model in 2008 to predict E_{SRFC} based on forecasts of the right-hand side quantities.

The 2008 *SI* forecast model is displayed in Figure 33. The 2004 record high jack escapement data point (*SI* year 2005) was omitted from the model, and the relationship was fitted through the origin. From the 2007 SRFC spawning escapement of 1,900 jacks, the 2008 *SI* was forecast to be 54,600 (PFMC, 2008b). For $h_{SRFC,o}$, a forecast model was developed by relating the SRFC month-area-fishery-specific historical harvest rate indices to the observed fishing effort and, subsequently, fishing effort to operative management measures. The previous year September 1 through December 31 SRFC harvest was estimated directly using observed coded-wire tag recoveries, divided by the forecast *SI*, and incorporated in the $h_{SRFC,o}$ forecast. Methods were also developed to include in $h_{SRFC,o}$ non-landed fishing mortality in the case of non-retention fisheries. With the PFMC adopted fishery closures in 2008, the forecast $h_{SRFC,o}$ was 0.08. The non-zero forecast was primarily due to SRFC ocean harvest the previous fall (2007), with a minor harvest impact (< 100 fish) expected from the 2008 mark-selective coho recreational fishery conducted off Oregon. For the river fishery, the average harvest rate under normal management regulations was estimated to be 0.14 based on the historical angler survey data (O’Farrell et al., 2009). With the California Fish and Game Commission (CFGF) closure of the 2008 SRFC river fishery, $h_{SRFC,r}$ was forecast to be zero. Thus, the 2008 SRFC adult spawning escapement was forecast to be (PFMC,

Table 8: PFMC 2008 SRFC spawning escapement prediction model components: forecast and realized values. $Ratio = Realized \div Forecast$.

2008	Forecast	Realized	Ratio
SI	54,600	70,400	1.29
$h_{SRFC,o}$	0.08	0.06	0.75
$h_{SRFC,r}$	0.00	0.01	–
E_{SRFC}	59,000	66,300	1.12

917 2008c)

$$E_{SRFC} = 54,600 \times (1 - 0.08) \times (1 - 0.00) / (1 - 0.14) = 59,000; \quad (4)$$

918 less than one-half of the lower end of the escapement goal range.

919 The 2008 realized values of the SI , $h_{SRFC,o}$, $h_{SRFC,r}$, and E_{SRFC} are displayed
 920 alongside their forecast values in Table 8. The SI and harvest rates were well-
 921 forecast in April 2008, leading to a forecast of E_{SRFC} that was very close to the
 922 realized escapement. Given this forecast, the PFMC and CFGC took immediate
 923 action to close all Chinook fisheries impacting the stock for the remainder of 2008.
 924 The one exception to the complete closure was the Sacramento River late-fall run
 925 target fishery, which was assumed to have a small number of SRFC impacts which
 926 are reflected in the non-zero realized value of $h_{SRFC,r}$. The 2007 ocean fall fisheries
 927 did contribute to fewer SRFC spawning adults in 2008 than would have otherwise
 928 been the case, but only minimally so. Clearly, the proximate reason for the record
 929 low SRFC escapement in 2008 was back-to-back recruitment failures, and this was
 930 not caused by fisheries management.

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Coho and Chinook Salmon Decline in California during the Spawning Seasons of 2007/08

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2 February 2008

The short version

Near final data from across the range of coho salmon on the coast of California reveal there was a 73% decline in returning adults in 2007/08 compared to the same cohort in 2004/05. The problem extends beyond California: preliminary data from the Oregon coast show a 70% decline. The low coho salmon numbers come on the heels of the Pacific Management Council's report of exceptionally low Chinook salmon returns to California's Central Valley (and other streams in California, Oregon, Washington, and British Columbia) in the fall of 2007. Because of the broad spatial extent of the decline and the similar ocean ecology of the two species, ocean conditions are suspected as a main causative agent. The Wells Ocean Productivity Index (WOPI), an accurate measure of central California ocean productivity, reveals poor conditions during the spring and summer of 2006, when juvenile coho from the 2004/05 spawn entered the ocean. The WOPI also showed low productivity potential for the spring and summer of 2005, which may explain low returning Chinook salmon numbers in 2007. Further, if the WOPI has predictive power, adult Chinook salmon returns in 2008 should be low.

The long version

The Pacific Fisheries Management Council (PFMC) reported on 29 January 2008 unexpectedly low Chinook salmon returns to California in 2007, in particular to the Central Valley. Adult returns to the Sacramento River, the largest of Central Valley Chinook salmon runs, failed to meet resource management goals (122,000-180,000 spawners) for the first time in 15 years.

Now preliminary reports near the end of the 2007/08 spawning run indicate coho salmon are experiencing poor returns as well. As coho spawning season is nearing an end in California, state and federal biologists, using a variety of techniques, including visual, video, spawner/carcass, and redd surveys have found coho salmon returns to be far below what was expected, based on returns three years earlier, which are the same populations or yearclass lineages. Coho salmon are listed as endangered and threatened in the Central California Coast and Southern Oregon-Northern California Evolutionarily Significant Units (ESU), respectively, under the U.S. Endangered Species Act (ESA). Coho have essentially a fixed three-year life cycle in California, in contrast to Chinook salmon, which may return as mature adults as three (primarily), four, and some five year olds. For coho, each yearclass can be considered essentially a separate population because there is little mixing among yearclass lineages, with the exception of "jacks" that return as 2-year old males in limited numbers.

In California, mature coho salmon return to natal streams between late November and late January into February in coastal streams between the Oregon border and Scott Creek in Santa Cruz County. They return earlier in the northern part of the state grading to mid-December to mid-February in Scott Creek. In recent years, returns to Scott Creek were essentially complete by the end of January. Typically, spawning occurs within a month

or so after stream entry, whereas at the southern end of the range, it occurs almost immediately. Juvenile salmon emerge from redds in late winter – early spring and spend one year in the stream before migrating to the ocean in the following spring. They spend about 1.5 years in the ocean and return to spawn in the late fall-early winter three years hence.

Coho salmon returns in 2007/08

Of 13 streams between the Smith River and Scott Creek where surveys are conducted, there has been a 73% decline in returning coho salmon, compared to the same yearclass lineage returns in 2004/05 (Fig. 1). No stream had an increase or level returns. One stream, Redwood Creek in Marin County had a complete failure, with no returns for the first time on record. Scott Creek had only four jack returns, compared to 329 adults in 2004/05. There is a slight trend of greater declines toward the south, but for the most part, the data show large reductions in returning adults throughout the California coast. It appears that this phenomenon extends beyond California; preliminary and incomplete surveys of 22 streams through January in the Oregon Coast ESU found a mean decline in coho returns of 70% relative to returns in 2004/05. Their estimate of 51,000 returning adults to the Oregon Coast ESU in 2007/08 is the lowest since 1999. Further, their data show the decline has been continuing for the past three years.

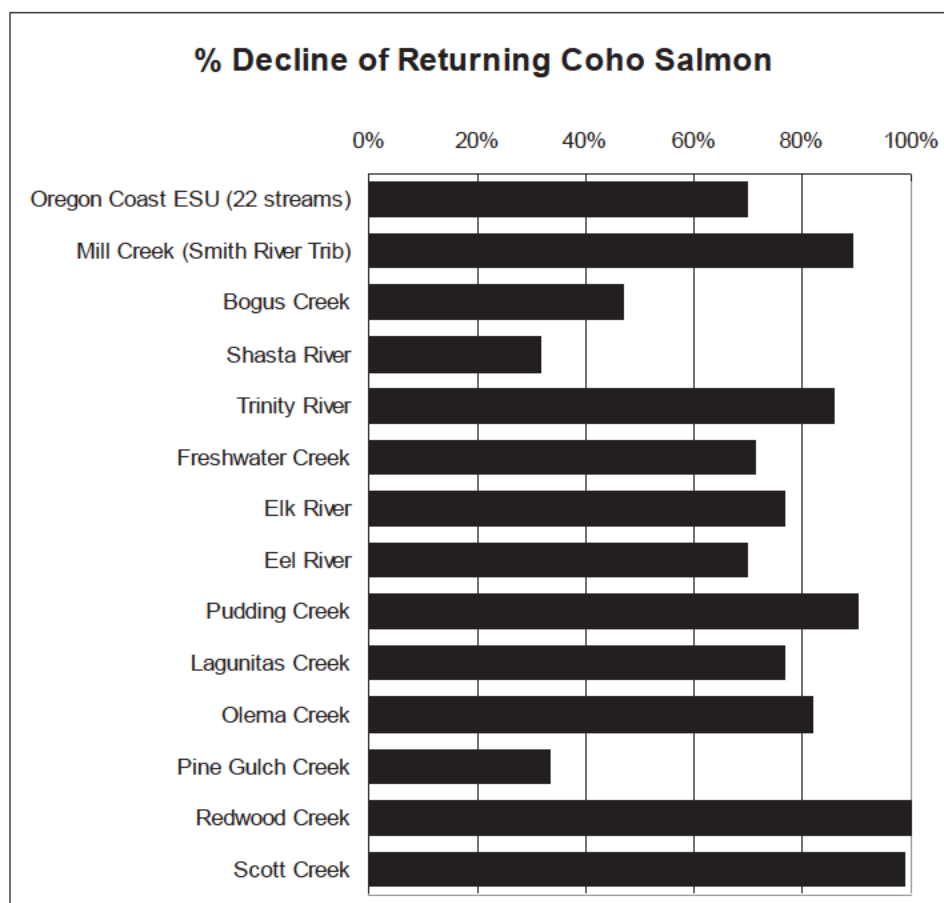


Figure 1. Percent decline of returning coho salmon to streams in California and Oregon 2007/08 relative to returns in 2004/05. Streams listed from north to south.

Causation

Although there are no shortage of potential contributors to the decline, including such wide ranging factors as poor fecundity of the 2004/05 yearclass; hydrologic flushing of fry prematurely to sea by high stream flows in 2005; increased predation by avian, pinniped, and/or other marine predators; and anthropogenic factors such as oil spills, fishing bycatch mortality, irrigation, and water exports from streams, the spatial extent of the problem points toward a broader agent: ocean conditions.

It is known that the first few months in the ocean are a critical period for growth and survival in salmonids. Recent work in the Fisheries Ecology Division shows that the greatest rates of growth and energy accumulation for Chinook salmon occurs in the first one to three months after ocean entry. Chinook salmon in California enter the ocean as subyearling and at a smaller size than coho, which enter the sea as yearlings after about 1.5 years in freshwater. Thus, Chinook and coho hatched in the same year, enter the ocean one year apart. Both enter in late spring to early summer, theoretically driven by evolutionary adaptation to seasonally beneficial feeding and growth conditions from a suite of climate and oceanographic factors that result annually in high biological productivity on the California coast between spring and late fall.

Ocean conditions were poor for salmon growth and survival during the spring–summer of both 2005 and 2006. The Wells Ocean Productivity Index (WOPI), a composite index of 13 oceanographic variables and indices, weighted heavily by sea level height, sea surface temperature, upwelling index, and surface wind stress, has been used to accurately predict zooplankton, juvenile shortbelly rockfish, and common murre production along the California coast, and is thus a valid indicator of ocean productivity. Index values for the spring–summer of 2005 and 2006 were low, indicating poor conditions for growth and survival (Fig. 2). In fact, only the El Niño years (1982-83, 1992-93, 1999) had lower WOPI values. The WOPI assesses conditions on a local scale for California, but has tracked another index, the Northern Oscillation Index (NOI), which is based on the strength of the North Pacific high pressure cell and describes a broader region of the North Pacific Ocean. In 2005 and 2006, the WOPI decoupled from the NOI, suggesting local conditions on the California coast were worse than for the larger North Pacific region. These results indicate that ocean conditions in the spring and summer, when juvenile coho and Chinook salmon enter the ocean, were unfavorable to growth and survival. This may explain the poor returns of both coho in 2007/08 and Chinook salmon in 2007. And, if the WOPI has predictive power, adult Chinook returns in 2008 should be low, supporting independent findings by the PFMC's Salmon Technical Team, which reported a record low in the number of jacks returning to the Central Valley this past fall. Jack returns have been a useful predictor of run size in the next year, in this case, 2008. In 2007, only 2,000 jacks returned compared to the previous low of 10,000 and the long-term average of 40,000.

Further Considerations

Given the imperiled nature of coho (2 of 2 ESUs listed by ESA) and Chinook salmon (10 of 13 ESUs listed) in California it is critical that coastwide instream monitoring programs be implemented and maintained to allow warning of impending

problems to these valuable resources. Without the existing minimal monitoring effort, since coho are not commercially fished or regulated, there would be little notice of their decline.

Further, the need for ocean monitoring on a consistent basis to understand the changing conditions, responses of salmon and other marine organisms, and to provide data to improve our ability to forecast impacts on marine resources, including California's salmon, cannot be overemphasized. Implementation of ocean observing systems, as recommended by two independent federal reviews of ocean policy and California's Proposition 40, would greatly improve our understanding of the ocean, which would benefit the sustainability of our valuable marine resources, as well as society in general.

The dire situation evident this year also emphasizes the importance of genetically-diverse captive broodstocks, such as those at Warm Springs Dam on the Russian River and at the Fisheries Ecology Division laboratory (Southwest Fisheries Science Center, National Marine Fisheries Service) in Santa Cruz, which supplies mature fish and their gametes to Kingfisher Flat Hatchery, operated by the Monterey Bay Salmon & Trout Project, in the Scott Creek watershed. With fluctuating, and sometime adverse, ocean conditions that impact salmon over broad areas, maintaining a pool of broodstock derived from extant populations, may be the last best effort at preserving these stocks until more favorable conditions are reestablished.

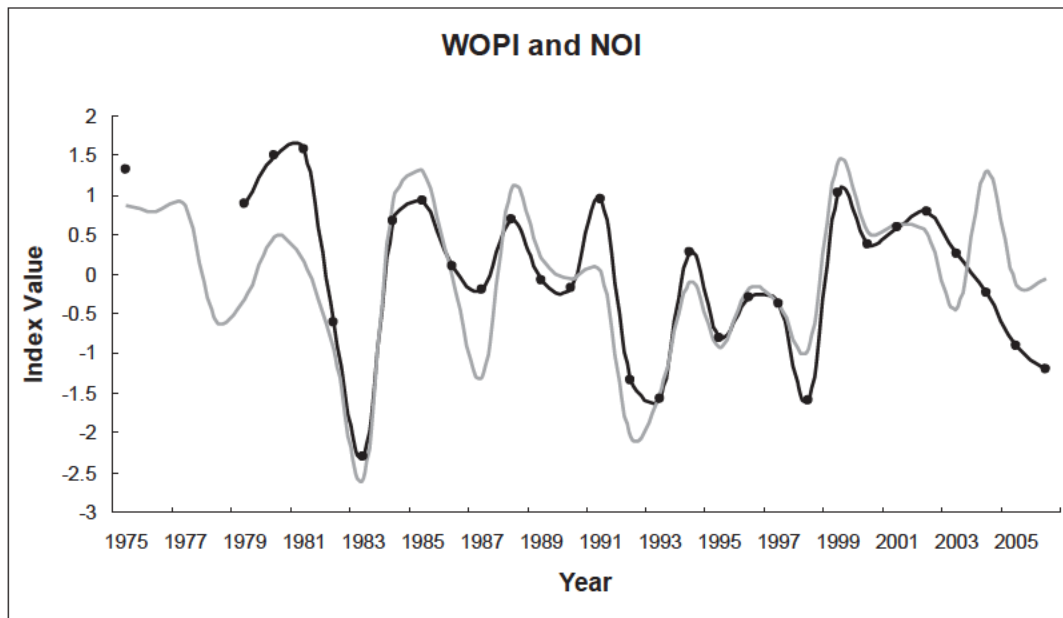
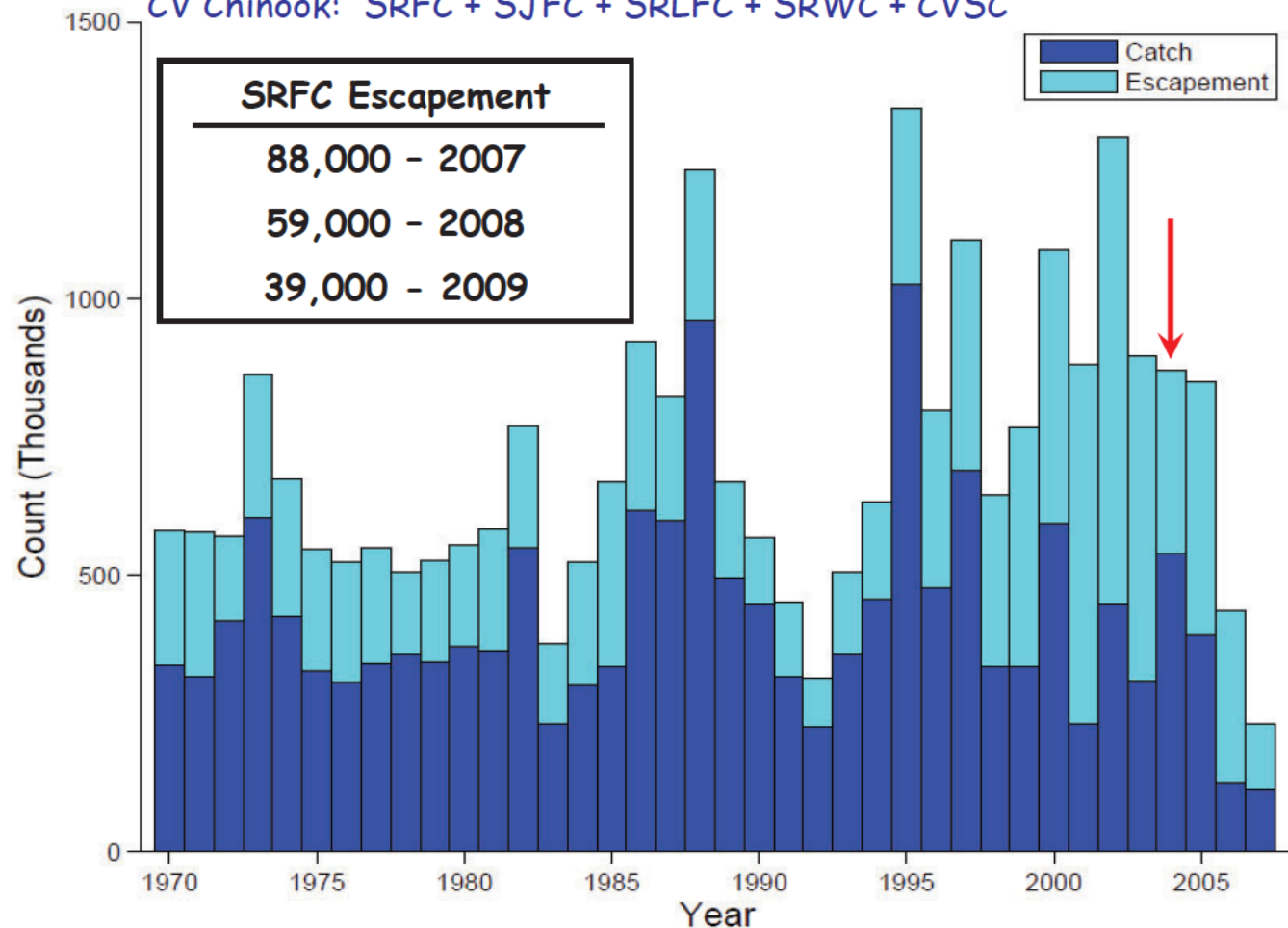


Figure 2. The Wells Ocean Productivity Index (WOPI, black line) and the Northern Oscillation Index (NOI, grey line) between 1975 and 2006. Values derived for March-August. Note the close fit between the larger-scale NOI, which represents the strength of the North Pacific high pressure cell, and local-scale WOPI, except for recent years (2004-2006), suggesting a change in local conditions. Low values indicate conditions for lower biological productivity.

What's the Problem?

The Central Valley Index = Chinook ocean harvest South of Pt. Arena +
CV Chinook spawner escapement

CV Chinook: SRFC + SJFC + SRLFC + SRWC + CVSC



- **Causes of fluctuations/declines of populations poorly known**
- **Few studies on freshwater mortality of outmigrants**
- **Sites of mortality poorly known**
- **Little known on smolt outmigration rates**

Migration & Survival of Juvenile Salmonids in California's Central Valley & San Francisco Estuary



A.P. Klimley **UCDAVIS**
R.B. MacFarlane 
S.L. Lindley 
A.J. Ammann 
P.T. Sandstrom **UCDAVIS**
C.J. Michel 
E.D. Chapman **UCDAVIS**



California Fish Tracking Consortium



Collaborators



University of California, Davis
Dept. Wildlife, Fish & Cons. Biology
&
NOAA, NMFS, SWFSC
Fisheries Ecology Division

Natural & Anthropogenic Influences,
Battle Creek to Golden Gate



U.S. Army Corps of Engineers,
San Francisco, CA

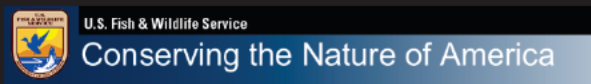


Bay Planning Coalition,
San Francisco, CA

Dredging & Disposal,
San Francisco Estuary



ECORP Consulting, Inc.,
Rocklin, CA



U.S. Fish & Wildlife Service,
Stockton, CA

Water Exports & Pumping,
Delta



CA Dept. Water Resources,
Sacramento, CA



East Bay Municipal Utility District,
Lodi, CA

Ecosystem studies & hatchery,
Mokelumne River



Hanson Environmental, Inc.,
Walnut Creek, CA

Sand mining,
Rivers confluence

Collaborators (cont'd)



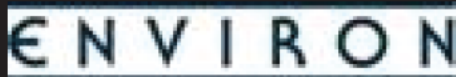
California Department of
Fish & Game

Ecological studies of steelhead &
resident rainbow trout in South Fork
of the Yuba River



H.T. Harvey & Associates

Impacts of levee repair in Delta
(contracted by DWR)



Environ Corporation

Fish behavior at artificial
reefs in San Francisco
Estuary

Aquarium of the Bay
San Francisco CA

Bay Institute

Fish behavioral Ecology
Studies

Movement Rate

[from CWT]

Late-fall Chinook:

Rate: $\bar{X} = 27 + 0.2 \text{ km/d}$
(1.25 - 114 km/d)

Time: ~ 17 days to C.I.
[1993-2005, n = 7,189]

Steelhead:

Rate: $\bar{X} = 17 + 0.8 \text{ km/d}$
(0.29 - 64 km/d)

Time: ~ 26.5 days to C.I.
[2000-2005, n = 242]

data from J. Speegle, U.S. FWS



Image by Tom Pearson

Fall Chinook Transit Time (days)

\bar{x} age (km 3)

\bar{x} age (km 68)

transit time

1995 - 28

1996 - 24

1997 - 40

1998 - 8

1999 - 28

2000 - 22

2001 - 21

Transit Time:

24+10 d [sd]

Migration Rate:

1.6 - 3.1 (8.1) km/d

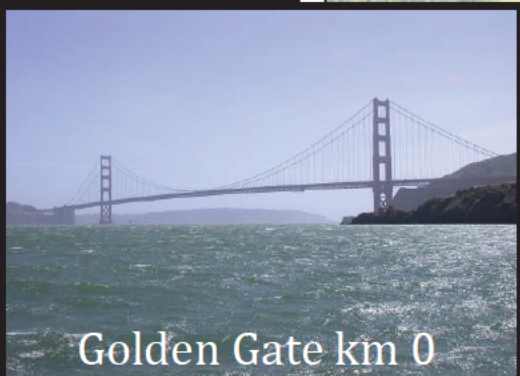


Survival



CWT data: 2-4% in Sacramento River

[Battle Crk - Knights Ldg (381 km)]
(Snyder & Titus, 2000)



Vemco Technology

• Transmitters

- Vemco V7 or V9 (7-9mm dia x 18.5-24mm, ~2-4g in air)
- Battery life ≥ 95 -150 days @ 60 sec intervals
- Surgically implanted in fish ≥ 140 mm FL



V 7

• Automated receivers

- Vemco VR2 (& VR3)
- Records tag number and time
- Range of up to 300m (+/-)
- 12-15 mo (5 yr) battery life
- Temperature logger @ each site



VR 2



VR 3
with flotation
collar

Surgically implanting transmitters

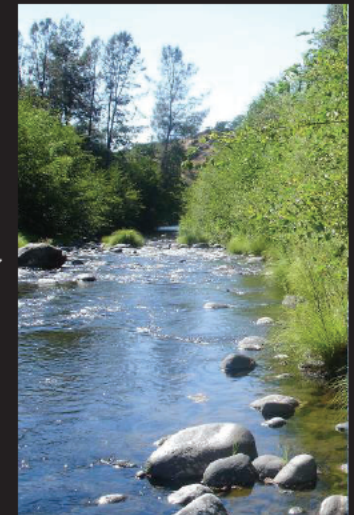


CFTC Salmonid Tagging

[releases Dec - Apr]

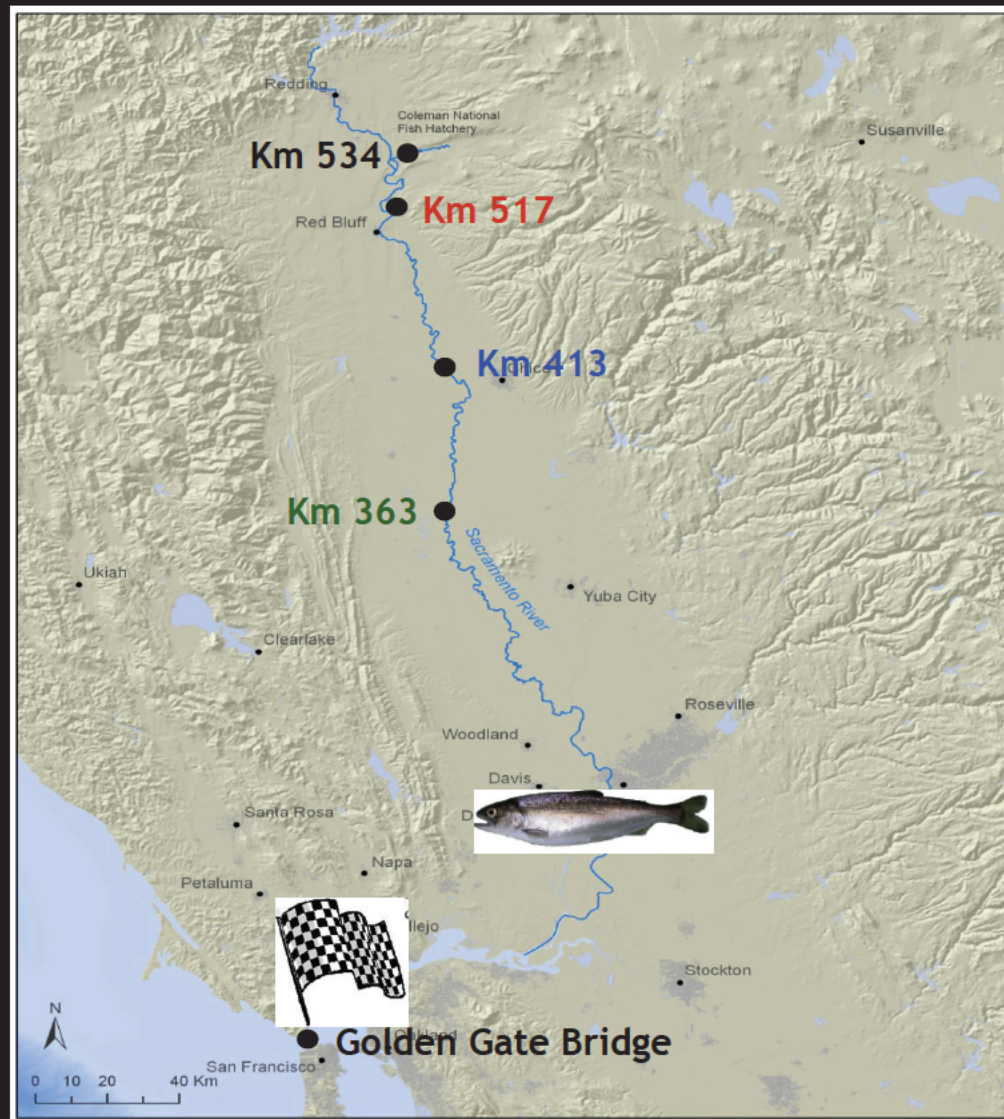
Agency	Species	2006/7	2007/8	2008/9	2009/10
UCD / NOAA	Chinook salmon	200	304	300	306
	Steelhead	200	300	300	300
ACOE	Chinook salmon	50	50	500	497
	Steelhead	49	50	500	499
USFWS	Chinook salmon	144	421	635	599
TOTAL		643	1,125	2,235	2,201

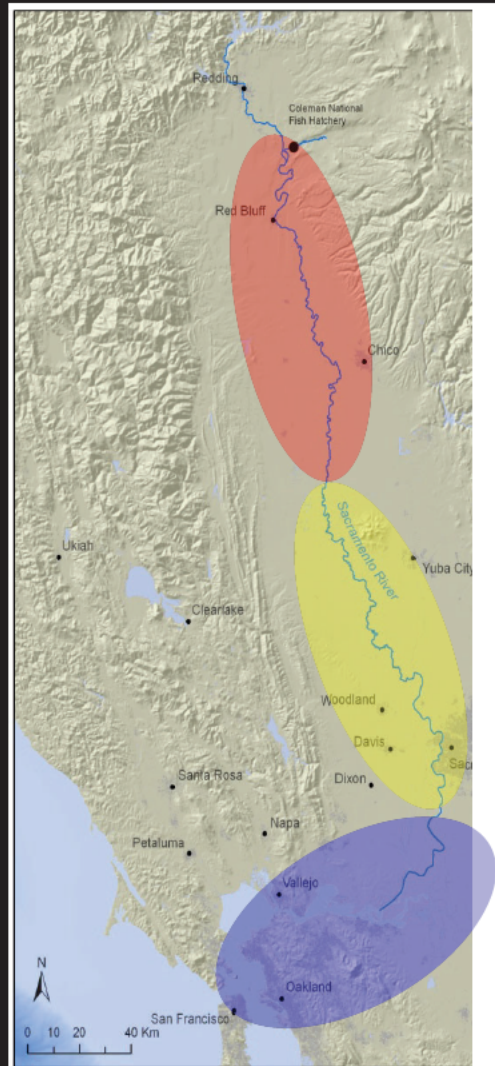
- Releases in December & January of 2006/07 to 2009/10
- Up to three release sites were used in each year:



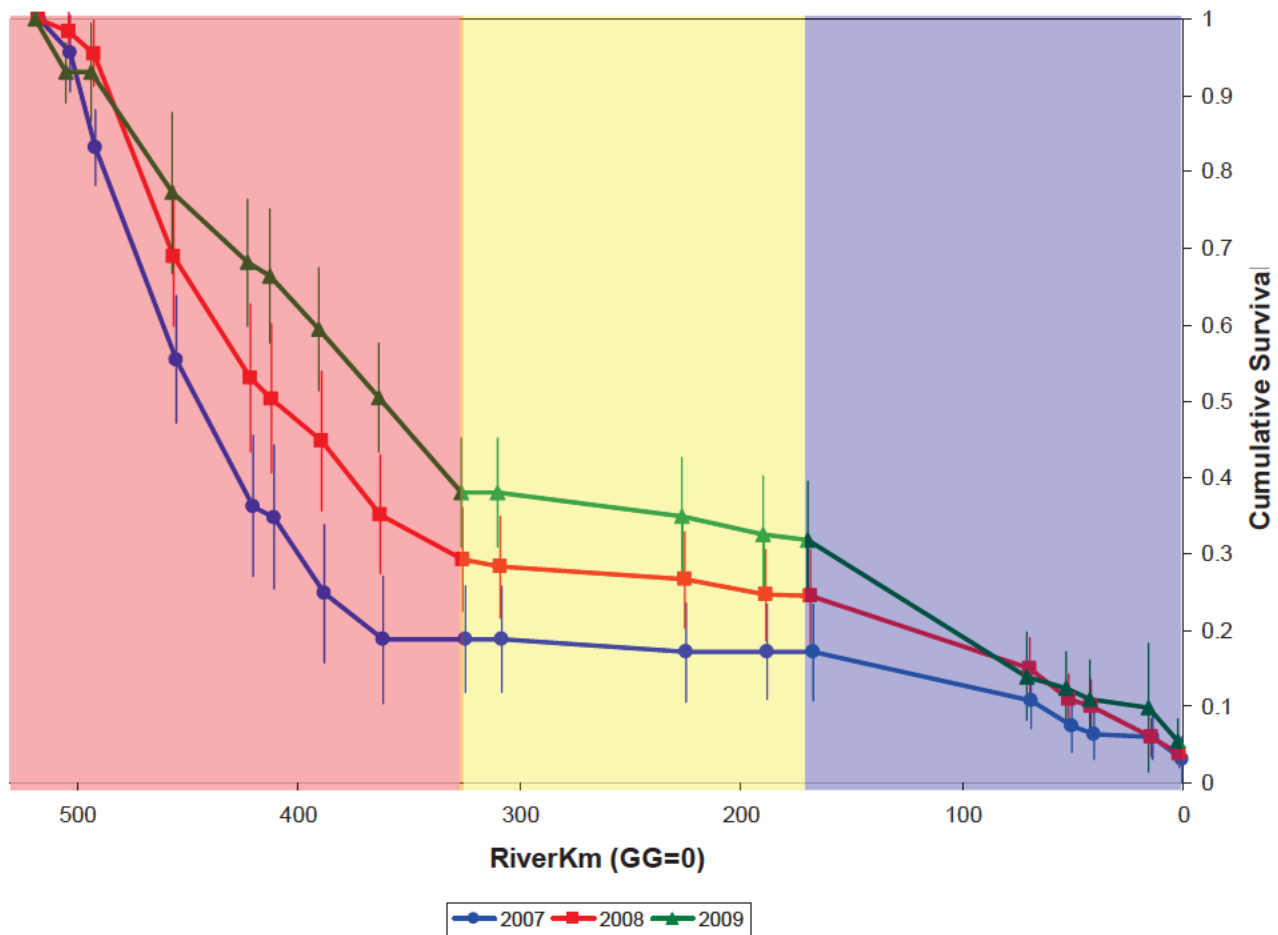
Survival Late-fall Chinook salmon smolts

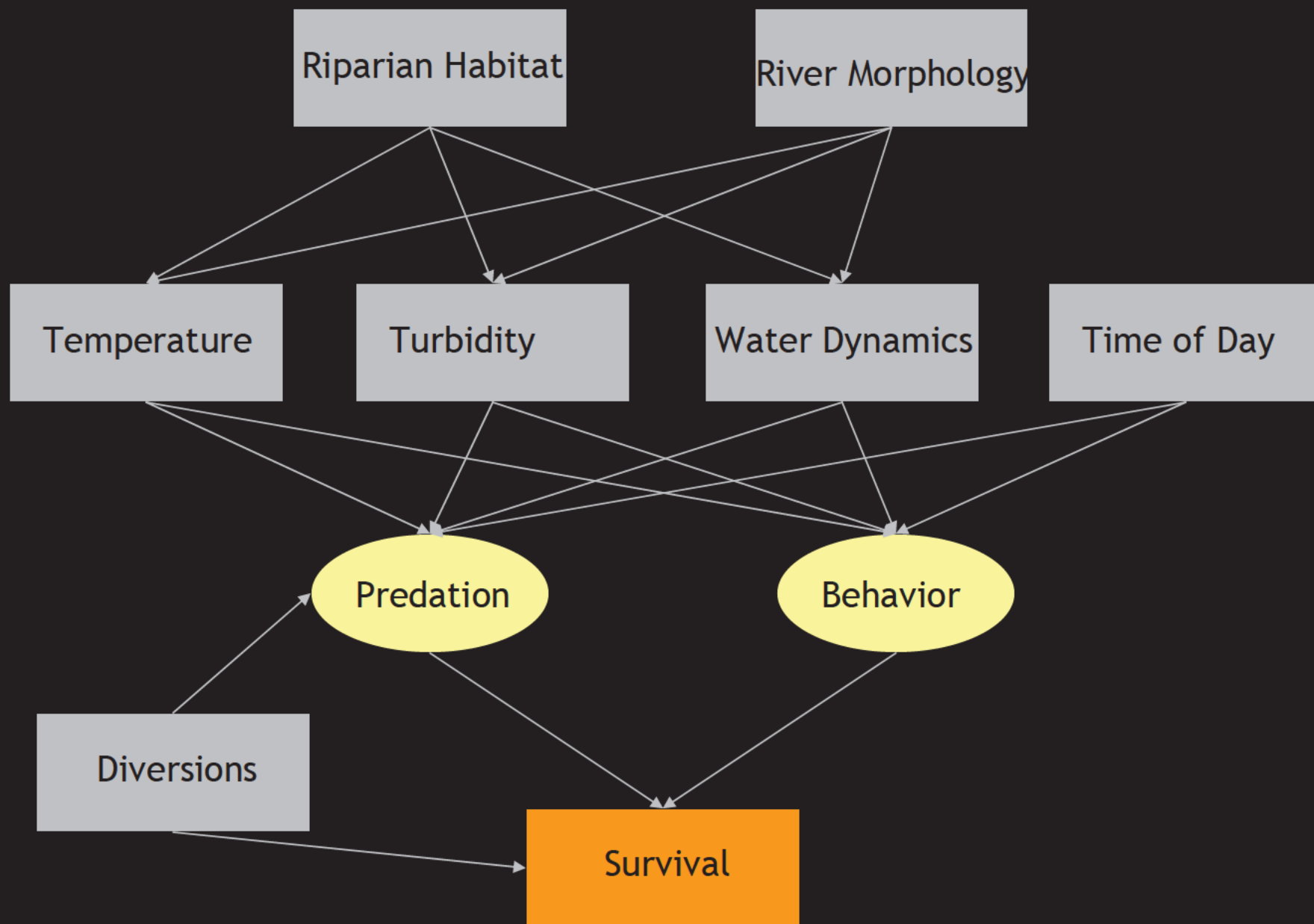
Year	# released	% survival \pm SE (CJS)
2007	200	3.1 \pm 1.5
2008	102	6.1 \pm 2.4
	101	8.9 \pm 2.8
	101	7.2 \pm 2.6
2009	100	4.3 \pm 2.1
	100	13.2 \pm 3.8
	100	8.1 \pm 2.7





Cumulative Survival per Reach per Year







Riparian Habitat

- % Natural
- % Agricultural
- % Urban

River Morphology

- % Levee
- % Rip-rap
- Sinuosity

Temperature

- Temperature (°C)

Turbidity

- Turbidity (ntu)

Water Dynamics

- Flow
- Velocity
- Width
- Depth

Time of Day

- % night travel

Predation

Behavior

Diversions

- Diversions per km

Survival

$$\text{logit}(\phi) = \text{Intercept} + \beta_1 \text{ReachLength} + \beta_2 [\text{Spatial} - \text{Temporal Variable}]$$

Model	Standardized β coefficient
<i>Fully Reach Independent</i>	
Max channel depth (m)	1.91
Turbidity (ntu)	1.52
Surface width (m)	0.02
% Night travel	1.36
Δ flow at start of movement	0.42
Flow ($\text{m}^3 \cdot \text{sec}^{-1}$)	-1.08
Base model (constant survival per km)	
Channel velocity ($\text{m} \cdot \text{s}^{-1}$)	-0.24
Temperature ($^{\circ}\text{C}$)	0.01

Riparian Habitat

- % Natural
- % Agricultural
- % Urban

River Morphology

- % Leveed (lower river)**
- % Rip-rap (lower river)**
- Sinuosity (up-river)**

Temperature

- Temperature (°C)

Turbidity

- Turbidity (ntu)**

Water Dynamics

- Flow (-)
- Velocity
- Width

- Depth**

Time of Day

- % night travel**

Predation

Behavior

Diversions

- Diversions per km

Survival

Products

- **PROOF OF CONCEPT**
- **Data to Pacific Fisheries Management Council, NOAA Southwest Fisheries Science Center modelers & stock assessors, etc. for river phase survival estimates**
- **Better knowledge of reach-specific mortality**
- **Pathway selection & mortality within the Delta related to status of Delta Cross-channel gate (Perry et al. 2010)**
- **Advancements in knowledge of monitor performance, tag performance, implantation effects**
- **Series of research papers documenting:**
 - **(1) survival & movement of Central Valley salmonids**
 - **(2) acoustic technology performance**
 - **(3) physiological responses to tagging**

from Bodega Bay symposium

Estimating Survival and Migration Route Probabilities of Juvenile Chinook Salmon in the Sacramento–San Joaquin River Delta

RUSSELL W. PERRY* AND JOHN R. SKALSKI

School of Aquatic and Fishery Sciences, University of Washington, Seattle, Washington 98103, USA

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PHILIP T. SANDSTROM AND A. PETER KLIMLEY

Biotelemetry Laboratory, Department of Wildlife Fish and Conservation Biology,
University of California, Davis, California 95616, USA

ARNOLD AMMANN AND BRUCE MACFARLANE

National Oceanic and Atmospheric Administration–Fisheries, Southwest Fisheries Science Center,
Fisheries Ecology Division, Santa Cruz, California 95060, USA

Abstract.—Juvenile Chinook salmon *Oncorhynchus tshawytscha* emigrating from natal tributaries of the Sacramento River must negotiate the Sacramento–San Joaquin River Delta, a complex network of natural and man-made channels linking the Sacramento River with San Francisco Bay. Natural processes and water management actions affect the fractions of the population using the different migration routes through the delta and survival within those routes. However, estimating these demographic parameters is difficult using traditional mark–recapture techniques, which depend on the physical recapture of fish (e.g., coded wire tags). Thus, our goals were to (1) develop a mark–recapture model to explicitly estimate the survival and migration route probabilities for each of four migration routes through the delta, (2) link these route-specific probabilities to population-level survival, and (3) apply this model to the first available acoustic telemetry data of smolt migration through the delta. The point estimate of survival through the delta for 64 tagged fish released in December 2006 ($\hat{S}_{delta} = 0.351$; SE = 0.101) was lower than that for 80 tagged fish released in January 2007 ($\hat{S}_{delta} = 0.543$; SE = 0.070). We attributed the observed difference in survival between releases to differences in survival for given migration routes and changes in the proportions of fish using the different routes. Our study shows how movements among, and survival within, migration routes interact to influence population-level survival through the delta. Thus, concurrent estimation of both route-specific migration and survival probabilities is critical to understanding the factors affecting population-level survival in a spatially complex environment such as the delta.

Many stocks of Chinook salmon *Oncorhynchus tshawytscha* in California, Washington, and Oregon are listed as threatened or endangered under the Endangered Species Act (Nehlsen et al. 1991; Myers et al. 1998). In the Central Valley of California, the winter, spring, and fall–late fall runs of Chinook salmon are federally listed as endangered, threatened, and a “species of concern,” respectively (NMFS 1997). Recently, owing to below-target returns of fall Chinook salmon to the Sacramento River, the National Marine Fisheries Service declared a federal disaster and closed the 2008 salmon fishery along the West Coast (NOAA 2008). Understanding factors affecting survival of

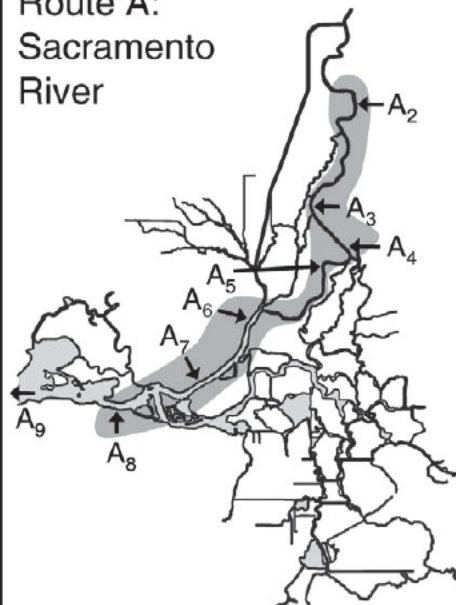
salmon is therefore critical to devising effective recovery strategies for these populations.

An important stage in the life history of Chinook salmon is the period of migration from natal tributaries to the ocean, when juvenile salmon in the Sacramento River may suffer mortality from a host of anthropogenic and natural factors (Baker and Morhardt 2001; Brandes and McLain 2001; Williams 2006). Juvenile Chinook salmon emigrating from the Sacramento River must pass through the Sacramento–San Joaquin River Delta, a complex network of natural and man-made river channels (Nichols et al. 1986). Juvenile salmon may migrate through a number of routes on their journey to the ocean. For example, they may migrate within the main-stem Sacramento River leading directly into San Francisco Bay (see route A in Figure 1). However, they may also migrate through longer secondary routes such as the interior delta, the network

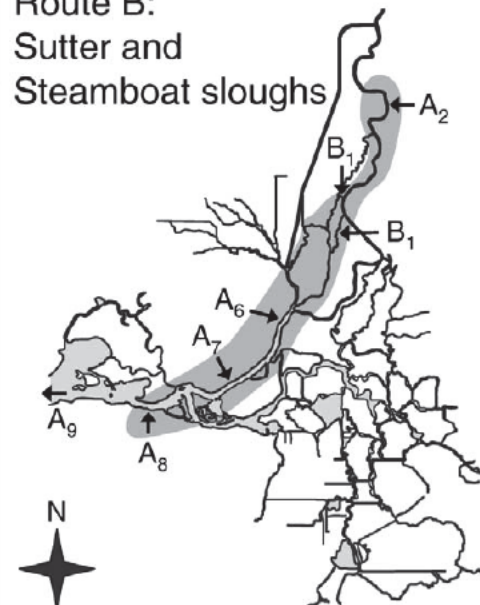
* Corresponding author: rwperry@u.washington.edu

Received September 11, 2008; accepted April 6, 2009
Published online December 31, 2009

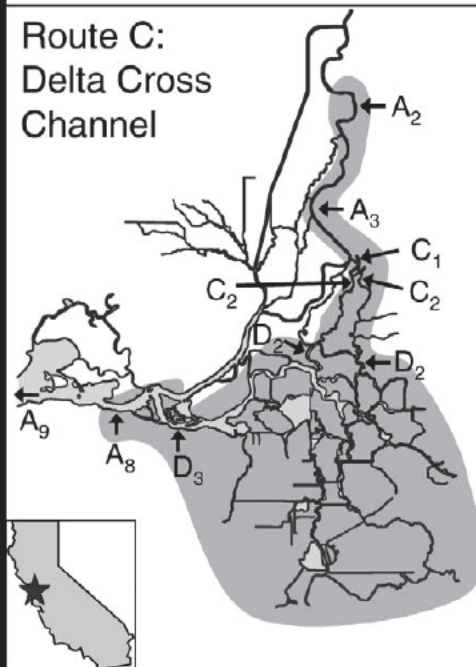
Route A:
Sacramento
River



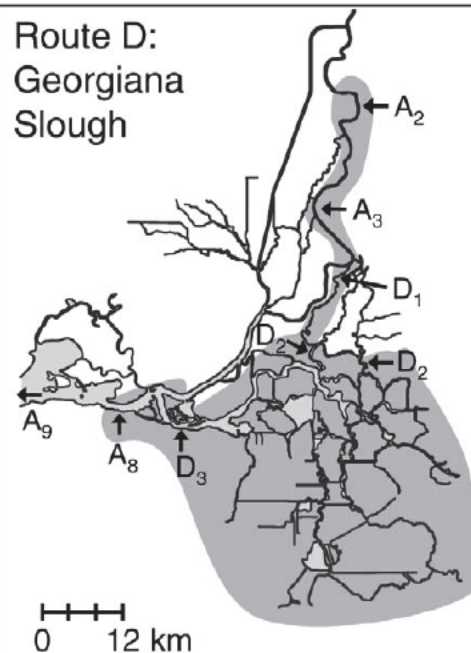
Route B:
Sutter and
Steamboat sloughs



Route C:
Delta Cross
Channel



Route D:
Georgiana
Slough



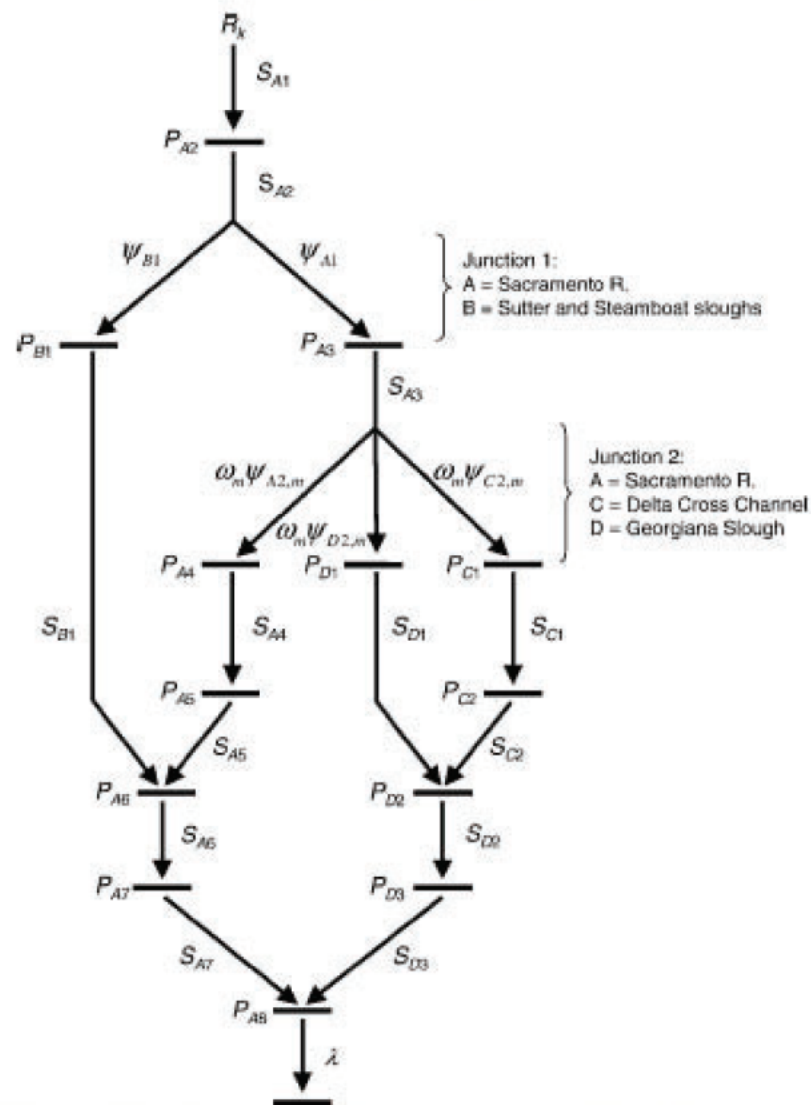


FIGURE 2.—Schematic of the mark-recapture model used to estimate survival (S_{ij}), detection (P_{ij}), and route entrainment (ψ_{ij}) probabilities of juvenile late-fall Chinook salmon migrating through the Sacramento-San Joaquin River Delta for releases made on 5 December 2006 and 17 January 2007. See text and Figure 1 for additional information.

TABLE 1.—Route-specific survival through the Sacramento–San Joaquin River Delta (\hat{S}_A) and the probability of migrating through each route ($\hat{\psi}_A$) for acoustically tagged fall-run juvenile Chinook salmon released on 5 December 2006 and 17 January 2007. Also shown is population survival through the delta, which is the average of route-specific survival weighted by the probability of migrating through each route; NA = not applicable.

Migration route	\hat{S}_A (SE)	95% profile likelihood interval	$\hat{\psi}_A$ (SE)	95% profile likelihood interval
5 December 2006				
Sacramento River	0.443 (0.146)	0.222–0.910	0.352 (0.066)	0.231, 0.487
Steamboat and Sutter sloughs	0.285 (0.112)	0.102–0.607	0.296 (0.062)	0.186, 0.426
Delta Cross Channel	0.332 (0.152)	0.116–0.783	0.235 (0.059)	0.133, 0.361
Georgiana Slough	0.332 (0.179)	0.087–0.848	0.117 (0.045)	0.048, 0.223
All routes	0.351 (0.101)	0.200–0.692		
17 January 2007 [DCC closed]				
Sacramento River	0.564 (0.086)	0.408–0.741	0.498 (0.068)	0.383, 0.614
Steamboat and Sutter sloughs	0.561 (0.092)	0.388–0.747	0.414 (0.059)	0.303, 0.531
Delta Cross Channel	NA		0.000	NA
Georgiana Slough	0.344 (0.288)	0.067–0.753	0.088 (0.034)	0.036, 0.170
All routes	0.543 (0.070)	0.416–0.691		

Future Directions

- Continue accumulating data on late-fall Chinook and steelhead smolt migration dynamics to gain understanding of factors influencing mortality
- Expand telemetry to smaller races
 - spring & winter runs – ESA listed & water mgmt factors
 - fall run – socioeconomic importance & decline tied to delta water management (by some)
- Increase effort (juveniles & returning adults) in the Delta to determine best water management options

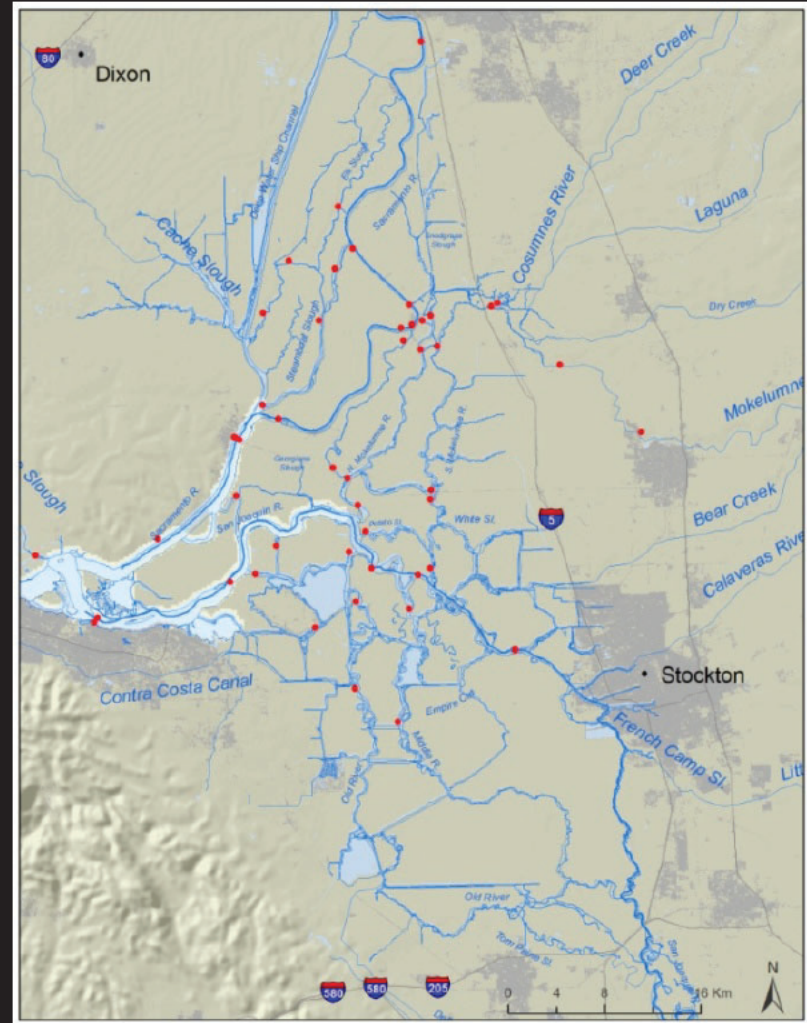
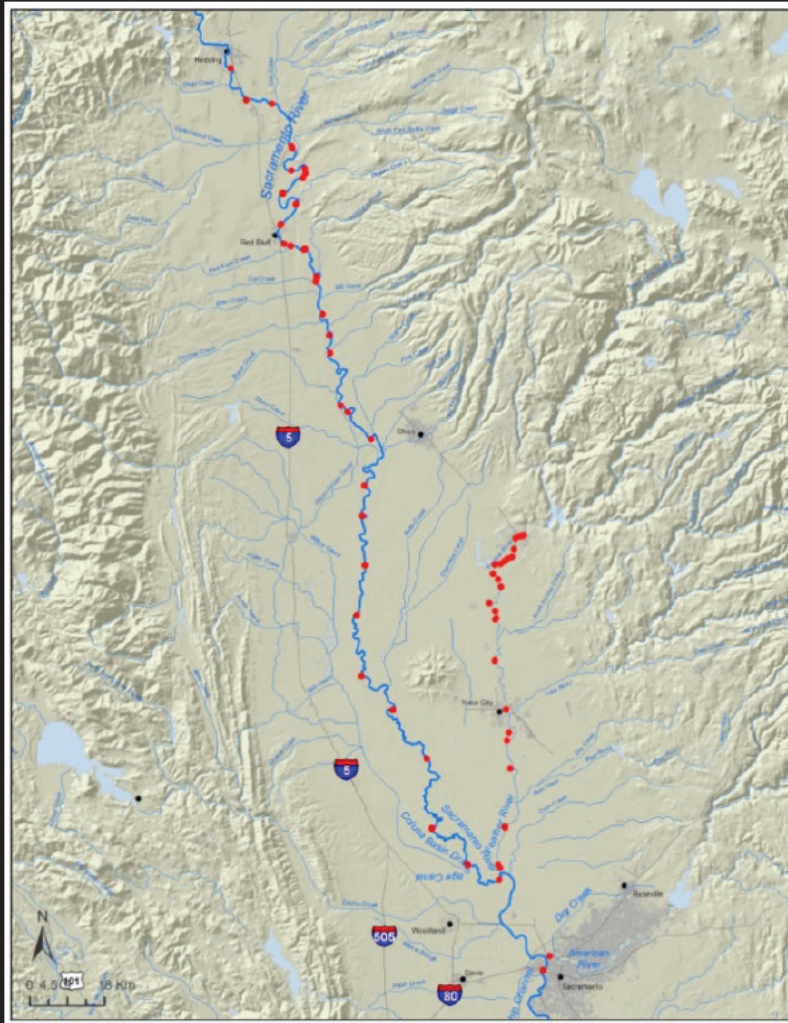


Fig.6 Array of VR-02w monitors within the Sacramento River (left) the Delta (right), which will be upgraded by the addition of JSAT monitors capable of detecting tagged fall and spring run Chinook smolts



Ray Troll, 2007

From: Costa, Jim
Sent: Thursday, April 7, 2011 4:38 PM
To: 'tbirmingham@westlandswater.org'
Subject: Re: Letter to Senator Feinstein on Drainage

Tried to read letter on BB ,, let's discuss tomorrow w/other items !!!!! Jim
Congressman Jim Costa

From: Tom Birmingham <tbirmingham@westlandswater.org>
To: 'Don Peracchi' <dperacchi@westlandswater.org>; 'Daniel Errotabere' <derrotabere@westlandswater.org>; 'Donald Devine' <ddevine@westlandswater.org>; 'Ted Sheely' <tsheely@westlandswater.org>; 'Frank Coelho, Jr.' <fcoelho@westlandswater.org>; 'Gary Esajian' <gesajian@westlandswater.org>; 'Larry Enos' <lenos@westlandswater.org>; 'Todd Neves' <tneves@westlandswater.org>
Cc: 'Craig Manson' <cmanson@westlandswater.org>; 'Jason Peltier' <jpeltier@westlandswater.org>; 'Bill Kahr' <bkahr@westlandswater.org>; 'Bernhardt, David L.' <DBernhardt@BHFS.com>; 'Mathews, Mark J.' <MMathews@BHFS.com>; 'O'Hanlon, Daniel' <dohanlon@kmtg.com>
Sent: Thu Apr 07 19:25:28 2011
Subject: Letter to Senator Feinstein on Drainage

The attached was sent today.

Subject: Conf Call re: water supply effort&discuss the "Toms" trip to DC

Location:Call #: 800- [REDACTED] - [REDACTED] PC: [REDACTED]

Start:4/28/2011 9:00 AM

End:4/28/2011 10:00 AM

Show Time As:Busy

Recurrence:(none)

Meeting Status:Not yet responded

Organizer:Carmela McHenry

Required Attendees:Ed Manning; Tom Birmingham ; Carolyn Jensen; Michael Burns; Doug Subers; joe.findaro@akerman.com; dbernhardt@bhfs.com; dpuglia@wga.com; gdelihant@wga.com; Tom Nassif

Optional Attendees:kclark@westlandswater.org; CNewland@WGA.com; chall@WGA.com

Resources:Call #: 800- [REDACTED] - [REDACTED] PC: [REDACTED]

When: Thursday, April 28, 2011 9:00 AM-10:00 AM (GMT-08:00) Pacific Time (US&Canada).

Where: Call #: 800- [REDACTED] - [REDACTED] PC: [REDACTED]

Note: The GMT offset above does not reflect daylight saving time adjustments.

~~*~*~*~*~*~*~*~*

From:Ed Manning [<mailto:emanning@ka-pow.com>]

Sent:Tuesday, April 12, 2011 11:27 AM

To:DPuglia@wga.com;Tom Birmingham;gdelihant@wga.com;dbernhardt@bhfs.com;Findaro, Joe;Carolyn Jensen;Michael Burns;Doug Subers

Cc:Carmela McHenry;kclark@westlandswater.org

Subject:Phone Call With Western Growers

All: As you are aware, Dave Puglia and I have had several productive conversations about how to launch a coordinated effort to lobby federal lawmakers to focus on the relationship between water supply constraints and California agricultural production. To further this effort, Dave and I agreed that a phone call with our principals and our respective D.C. lobbyists would be a good first step. We also discussed having the "Toms" do a trip to D.C. to discuss these issues with key Agriculture committee chairs and members. I am asking Carmela McHenry to work with Karen Clark and Dave Puglia to find a time that works for all of us to do a call to get this off the ground. I am also attaching a research paper done by Doug Subers in our office that identifies the seismic and climate change risks to the Delta that will threaten the future of California production agriculture. Thanks.

Ed Manning

KPPUBLICAFFAIRS

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p.916.448.2162f.916.448.4923

w.www.ka-pow.come.emanning@ka-pow.com

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From: Jason Peltier

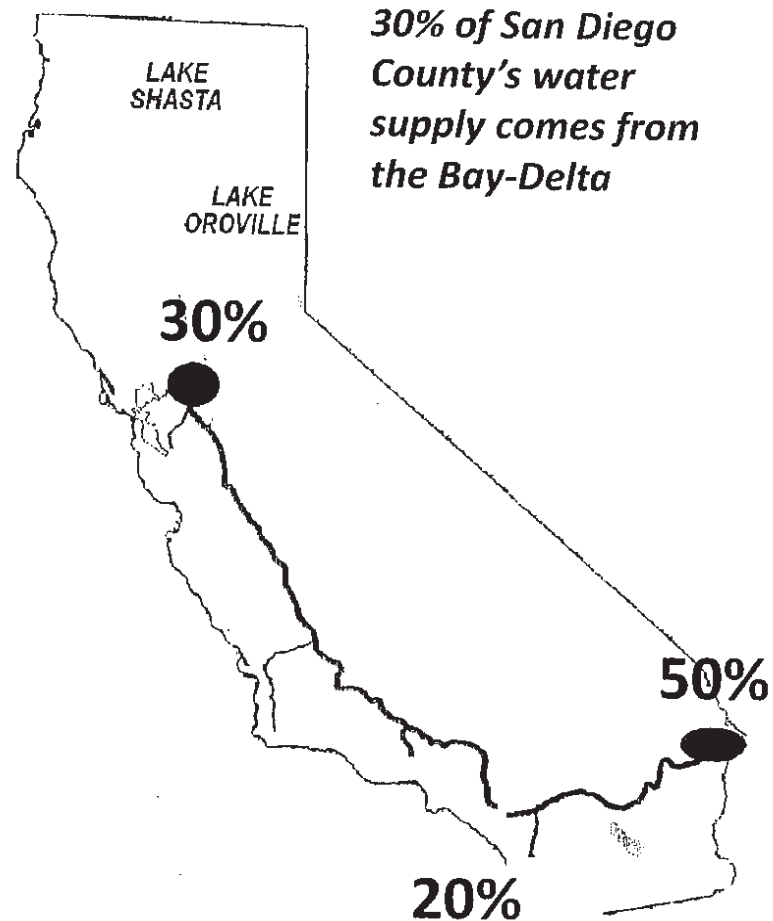
Sent: Friday, May 20, 2011 8:14 AM

To: 'Karen Clark'; 'Tony Coelho'; 'Bill Kahrl'; 'Carmela McHenry'; 'Carolyn Jensen'; 'David Bernhardt'; 'Doug Subers'; 'Ed Manning'; 'Gayle Holman'; 'Joe Findaro'; 'Sheila Greene'; 'Susan Ramos'

Subject: San Diego PowerPoint

Attachments: San Diego PowerPointPresentationMay2011.pdf

San Diego County Water Authority Supports a Bay-Delta Fix



Key Bay-Delta Issues of Concern

- ▶ Who's at the table?
- ▶ Southern California issues not addressed
 - Realistic assessment of demand
 - Realistic assessment of willingness and commitment to pay for current or future State Water Project costs
- ▶ Cost
- ▶ What's the timeline – and consequences of further delay



Who's at the table?

- ▶ Financial “real parties in interest” are not at the table
 - MWD is dependent on water sales revenues from its member agencies
 - But those revenues cannot be counted on
 - MWD's only revenues are provided to it by its member agencies
 - Those revenues are in sharp decline
- ▶ Need firm financing plan and commitments to pay from real parties in interest
- ▶ Delta parties are not at the table
 - Success in the Delta without support of the Delta Community is difficult to envision



Southern California-

Need realistic assessment of demand

- ▶ MWD's Integrated Resources Plan (IRP) proposes to overdevelop supplies by 500,000 acre-feet
 - New supplies come at the highest cost
 - Inconsistent with statewide conservation mandate
 - Inconsistent with MWD's member agencies' plans to develop independent supplies
 - Urban Water Management Plans due in June
 - MWD finalized its IRP without essential information
- ▶ MWD has become a house of cards
 - Pattern and practice of inflating sales and projected revenues

Southern California-

Need realistic assessment of willingness to pay

- ▶ MWD member agencies unwilling to commit to pay for current fixed costs
 - Problem was identified more than 15 years ago by independent MWD Blue Ribbon Task Force Report
 - MWD board has failed to act
- ▶ MWD currently proposing to sell water at a discount due to member agency budget constraints
 - But these budgets will become more, not less constrained in the future
- ▶ MWD member agencies want MWD to pay for their own projects, but do not want to pay for MWD projects
 - Member agency managers' letter to Blue Ribbon Committee underscores this point



Cost

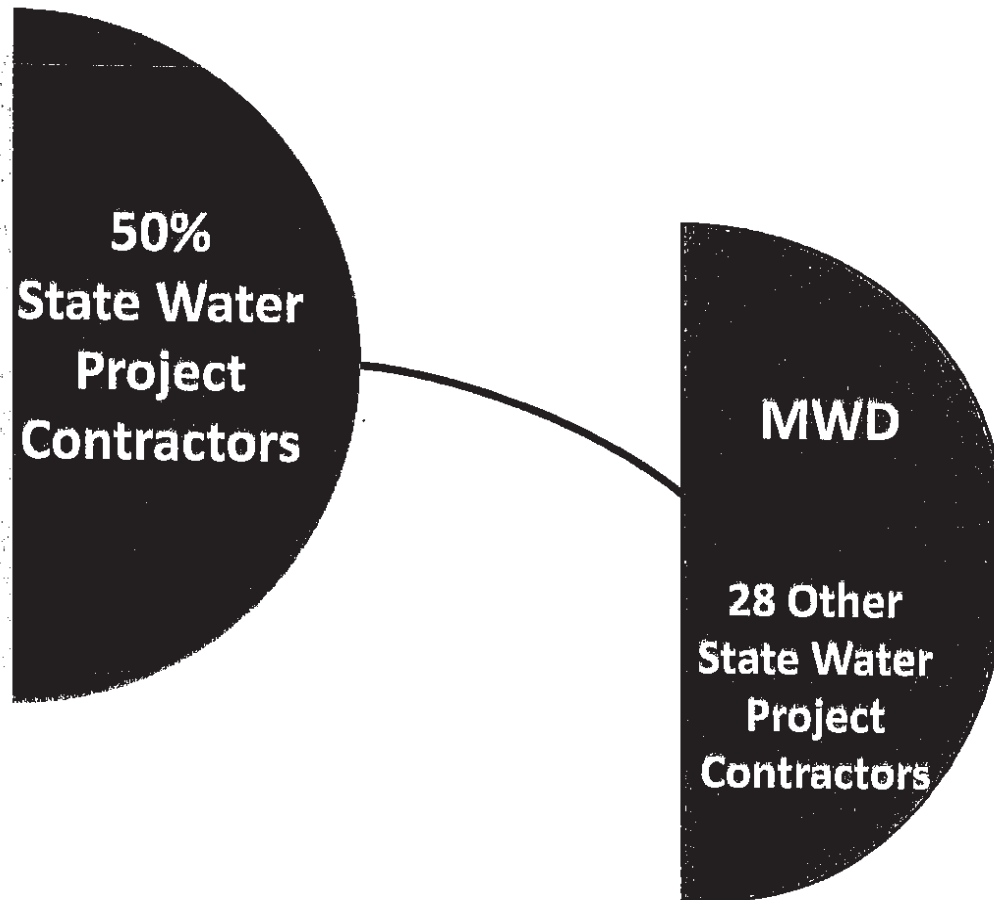
- ▶ Need to connect willingness to spend with willingness and commitment to pay
 - Represented by real, enforceable contracts
 - So far, San Diego is the only member agency willing to do that
- ▶ MWD rate structure has fatal flaw in the assumptions about who will pay for a Delta Fix
- ▶ San Diego is placed at unreasonable risk under MWD rate structure
 - Water Authority payments to MWD amount to 25% of total revenue
 - Water Authority remains largest purchaser of MWD water

What's the timeline?

- ▶ Failure to grapple with the key issues today will further delay project implementation
 - Failure to talk about cost during the planning process will lead to another “CalFed”
- ▶ Practical implementation challenges presented by absence of Delta community support
- ▶ Southern California water demands won't be “on hold” as the disputes continue
- ▶ Conservation and local projects are being implemented now



Who MWD Says Will Pay for the Delta Fix

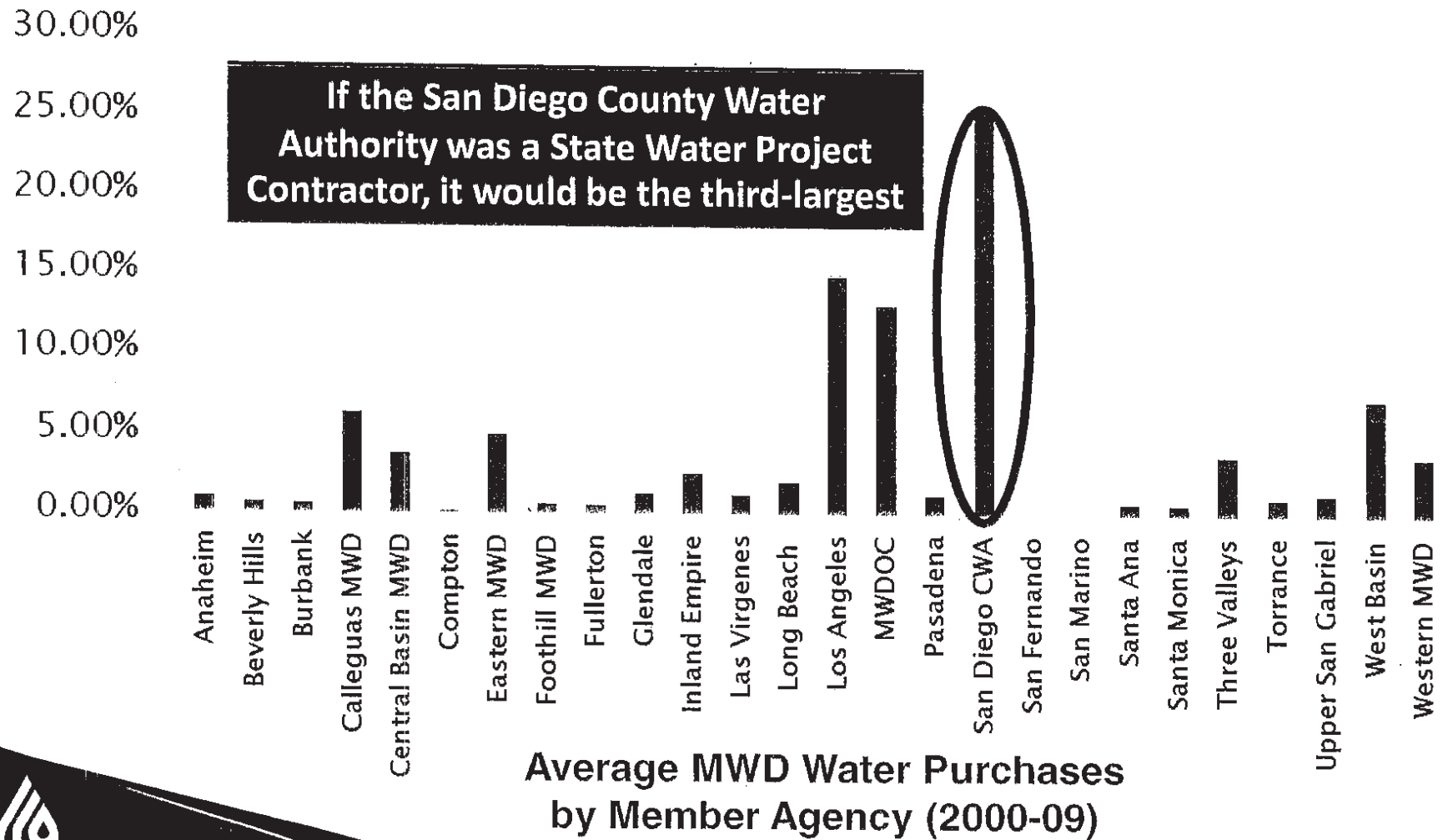


San Diego County
Water Authority

Who actually pays MWD's costs?

Most MWD Member Agencies buy little water

With no contracts in place, MWD revenues depend on variable sales



The City of San Diego has the Biggest Stake in the Water Authority

Water Authority
Member Agencies,
by Size of Total
Financial Payments



- | | | | | | |
|-------------------------|---------------------|---------------------|------------------------|---------------------|---------------------|
| ■ Carlsbad M.W.D. | ■ City of Del Mar | ■ City of Escondido | ■ Fallbrook P.U.D. | ■ Helix W.D. | ■ Lakeside W.D. |
| ■ City of National City | ■ City of Oceanside | ■ Olivenhain M.W.D. | ■ Otay W.D. | ■ Padre Dam M.W.D. | ■ Camp Pendleton |
| ■ City of Poway | ■ Rainbow M.W.D. | ■ Ramona M. W.D. | ■ Rincon Del Diable | ■ City of San Diego | ■ San Dieguito W.D. |
| ■ Santa Fe I.D. | ■ South Bay I.D. | ■ Vallecitos W.D. | ■ Valley Center M.W.D. | ■ Vista I.D. | ■ Yuima M.W.D. |

At MWD, there is a disconnect between decisions to spend and willingness to pay

- ▶ Decisions by board members to spend money are disconnected from their agencies' willingness to pay

In 1928, voting, water rights and financial commitment matched

Today, there is no connection

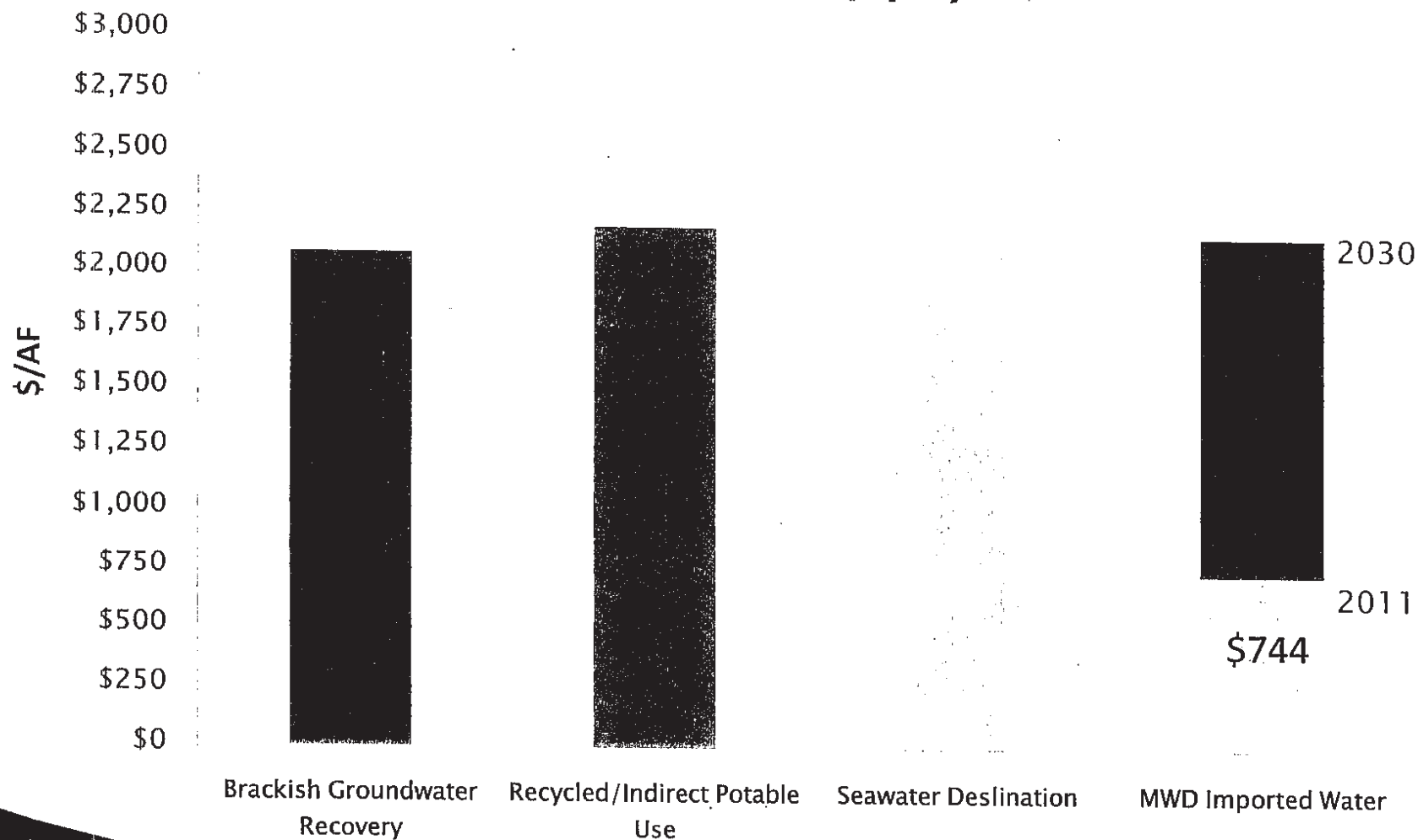
- ▶ Agencies most willing to support new projects have most aggressive plans to reduce purchases from MWD
- ▶ MWD board members support a Delta Fix – but are their agencies willing to pay?

Voting structure based upon arcane 1920's formula

- 1928: 100% of revenues from property taxes
- 2011: 5% of revenues from property taxes



MWD Member Agencies have Local Supply Options Available that Compare Favorably to Future MWD Supply Costs



MWD Imported Water Cost Assumes \$15 billion Delta Fix and 6%/year escalation

MWD Member Agency- City of Santa Monica

- ▶ “Today, the plant produces approximately 70 percent of the water residents use.”
- ▶ “...be 100 percent self-sufficient by 2020....”

Santa Monica Declares Water Self Dependence

posted Feb. 25, 2021, 7:48:00 am

City Dedicates New Water Treatment Plant

For many years, the City of Santa Monica has been in process to become self-sufficient in water from the Metropolitan Water District of Southern California. Today, the city's water supply is 70 percent self-sufficient, with the opening of the Santa Monica Water Treatment Plant (SMWTP), a 100-million-gallon-per-day facility, the city will only use imported water to supply the city's needs.

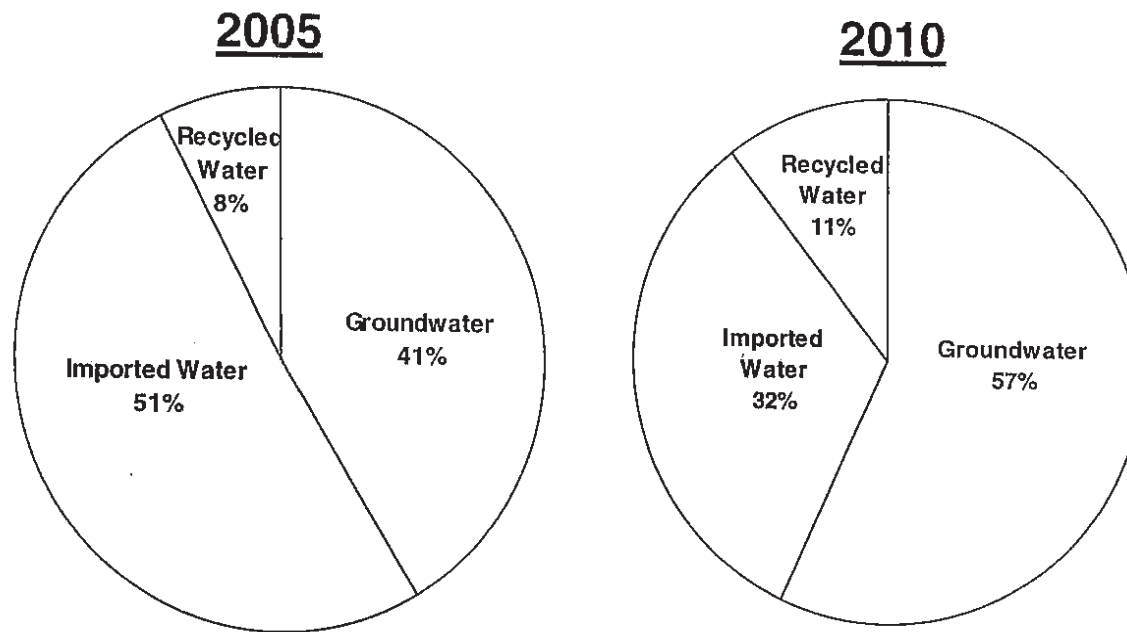
The new plant is operating on a 100-acre site, but the city's water supply is still 70 percent self-sufficient. The city's water supply is still 70 percent self-sufficient, with the opening of the Santa Monica Water Treatment Plant (SMWTP), a 100-million-gallon-per-day facility, the city will only use imported water to supply the city's needs.



San Diego County
Water Authority

MWD Member Agency- City of Long Beach

- ▶ Long Beach is reducing its reliance on imported water supplies from MWD



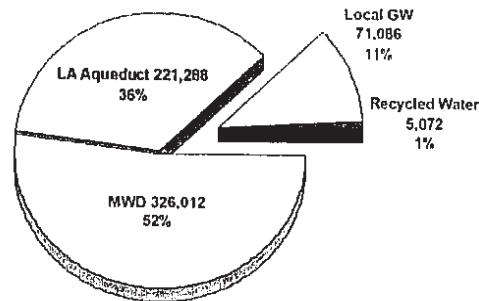
MWD Member Agency– City of Los Angeles

- Los Angeles plans to reduce its purchases from MWD by 48%

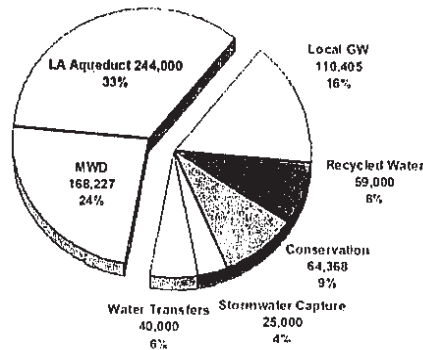


Comparison of Existing and 2035 Projected Water Supply Sources

FYE 2006 – 2010 Average
Total: 621,700 AFY



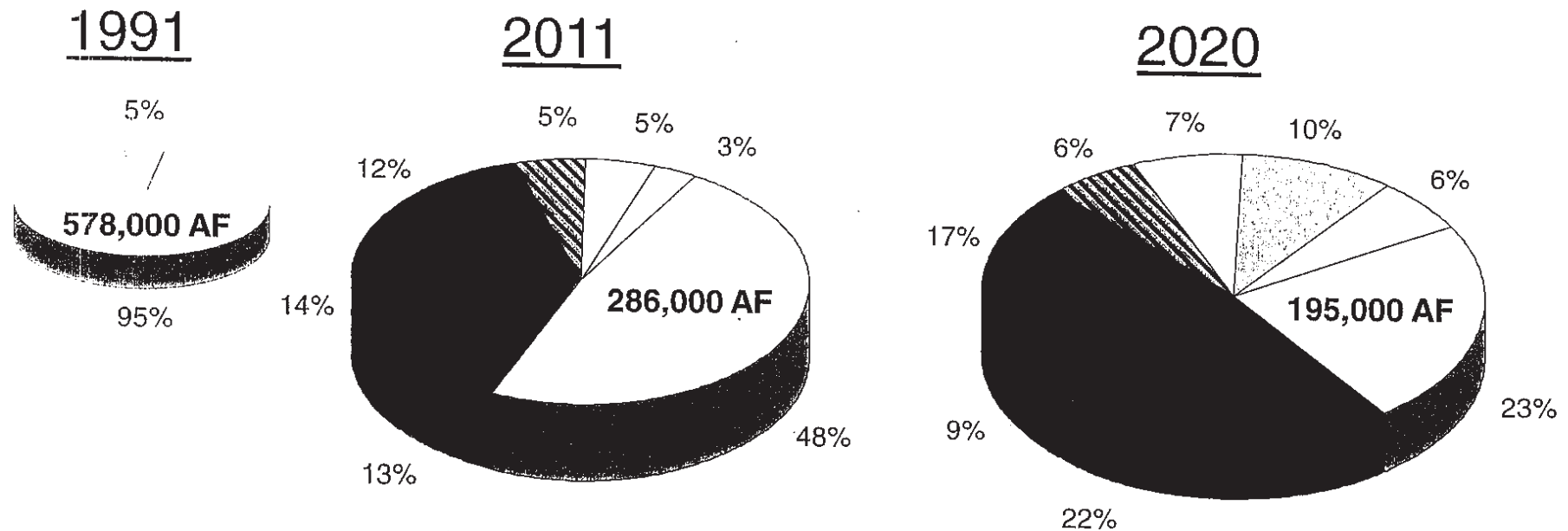
Fiscal Year 2034 – 35
Total: 711,000 AFY



Note: Charts do not reflect 100,000 AF of existing conservation

16

The Water Authority is also Increasing Local Supply Development and Reducing its Water Purchases from MWD



Conservation & Recycling:

1991=0%

2011=44%

2020=54%



Imperial Irrigation District Transfer



All American & Coachella Canal Lining



Local Conservation



Recycled Water



Metropolitan Water District



Seawater Desalination



Local Surface Water

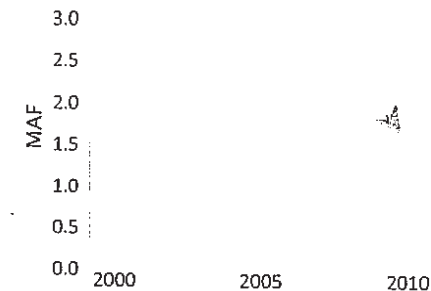


Groundwater

Supplies from MWD account for about half of San Diego County's supply today, with planned reduction to one-fourth by 2020

MWD is experiencing unprecedented financial challenges

MWD Sales



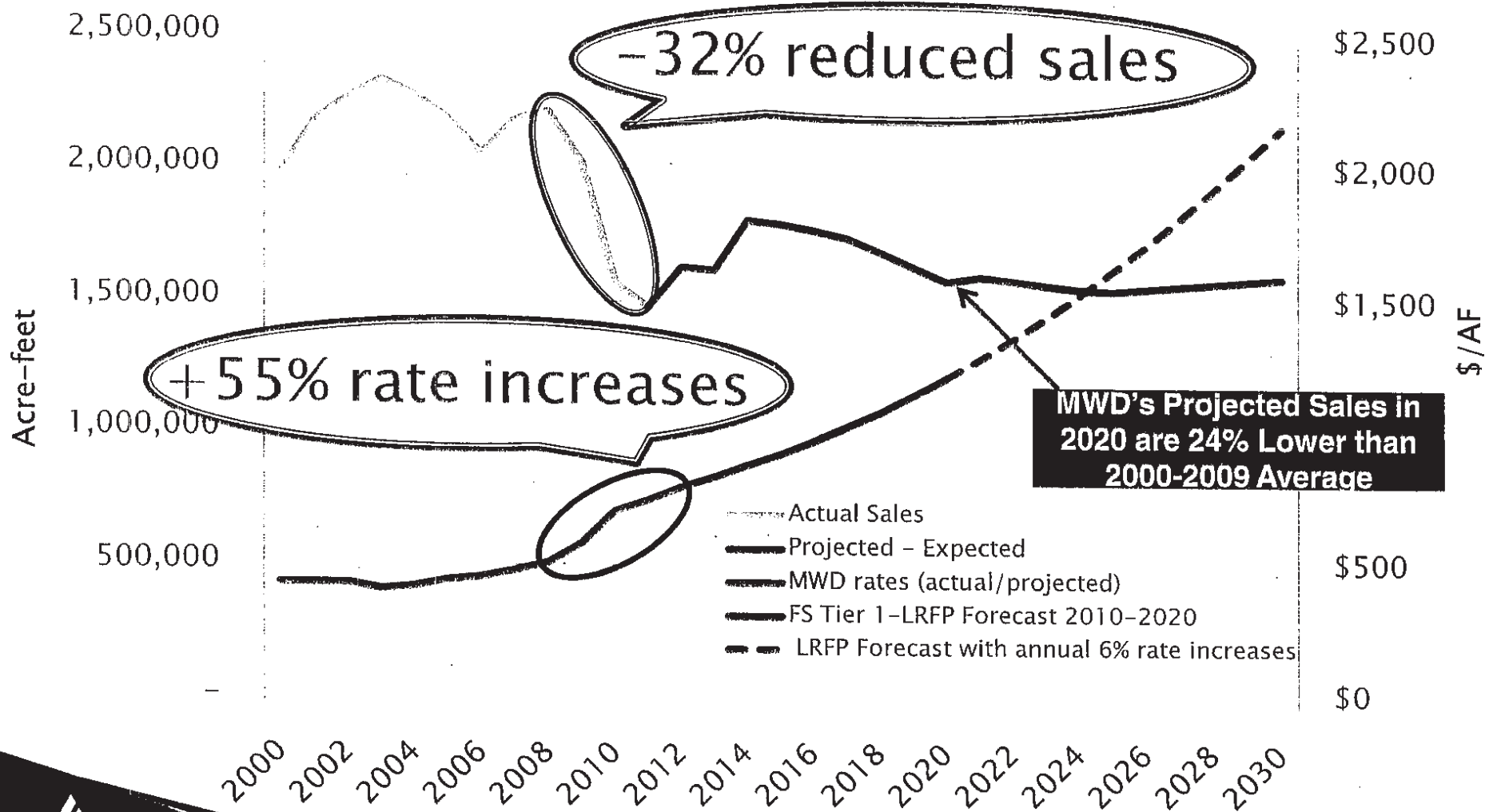
- ▶ MWD's rates are rising sharply
 - Up 55% since 2008
- ▶ MWD's water sales are declining sharply
 - Down 32% since 2008
- ▶ Leaving aside one-time budget gimmicks, the current fiscal year shows:
 - Revenue shortfall of almost \$200 million
 - Annual sales at historic low, more than 300,000 acre-feet less than budget adopted by board
 - Lowest water sales in more than two decades
 - Next fiscal year budget also relies on inflated sales projections



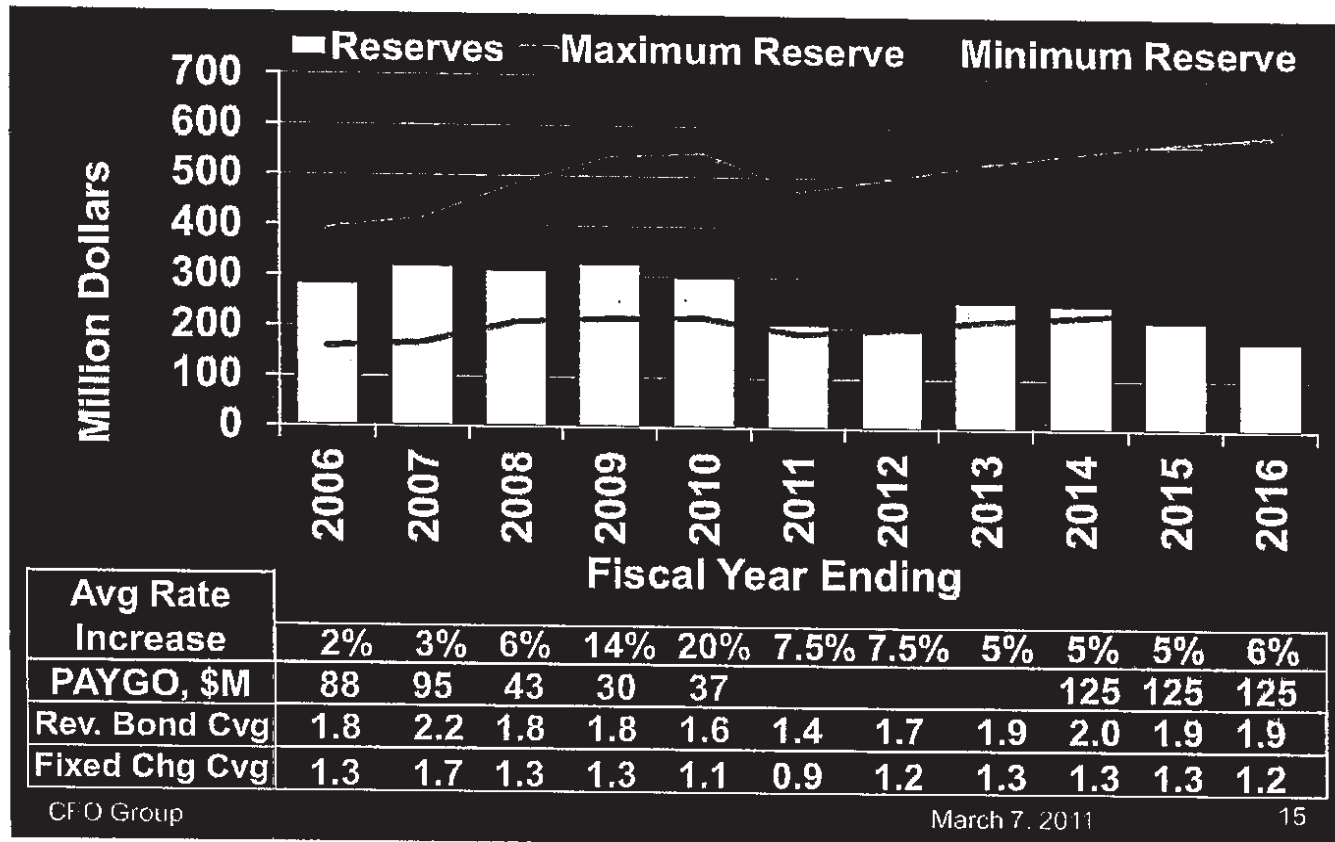
San Diego County
Water Authority

MWD Sales Decline & Rate Increases

80% of MWD's revenues come from water sales



MWD's financial reserves are Low – and Shrinking



MWD's Failure to Adjust to Changed Circumstances *Will Lead to a Financial Meltdown*

- ▶ In an era of sharply declining sales and member agency reduction in water purchases, MWD:
 - Is continuing to approve new subsidies, which further reduces water sales
 - Is proposing expensive water supply development projects to generate unneeded water
 - Has approved a 2010 Integrated Resources Plan that plans to over-develop 500,000 acre-feet of buffer supplies annually
- ▶ Who will pay?



MWD's Rate Structure Does Not Cover Current, Let Alone Expanded State Water Project Investment

- ▶ MWD does not have contracts with its 26 member agencies to back up its "Take-or-Pay" State Water Project Supply Contract with the State of California
 - MWD's 2011 obligation to the State: \$573 million
 - Current SWP contract runs through 2035
- ▶ 10-Year MWD "purchase orders" with its member agencies expire in 2012

The Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153
Attn: Brian G. Thomas, Chief Financial Officer

Re: Renewal of Purchase Order for Imported Water Supply

Pursuant to the "Renewal" section of the "Purchase Order for Imported Water Supply to be Provided by The Metropolitan Water District of Southern California" effective January 1, 2003 (the "Purchase Order"), we hereby provide non-binding notice to Metropolitan of our intent to renew the Purchase Order, on such terms and conditions as may be mutually agreed by the parties.

MWD Member Agencies Must Commit to Pay for Current and Future State Water Project Costs

- But they are unwilling to do so:

“...to date, most of our board members have said ‘we’re not so sure about that.’ And, most of our member agencies have said ‘No. Thanks, but no thanks, because we prefer this the way it is.’”

“Should people make those firm commitments going into the future? So far, the member agencies have opted not to. They prefer it the way it is.”

-- Excerpts of remarks by MWD General Manager Jeffrey Kightlinger, speaking at an August 10, 2010 public meeting in San Diego on MWD's draft 2010 Integrated Resources Plan (IRP).



San Diego County
Water Authority



The Critical Path to a Delta Fix Requires...

- ▶ The right parties to be at the table
- ▶ Realistic assessment of Southern California demands as represented by firm contracts
- ▶ Assurances that water supplies and access to facilities will be provided for by contract
- ▶ This is the essential foundation of a meaningful discussion about willingness to pay for a Delta Fix





San Diego County Water Authority Pledge to the Bay-Delta

- ▶ The San Diego County Water Authority will:
 - Support a realistic and affordable Bay-Delta fix
 - Back up that support with a firm, long-term contract to pay for its share of water and facilities
 - Will MWD's other 25 member agencies agree to do the same?



From: Weaver, Kiel
Sent: Thursday, June 2, 2011 1:42 PM
To: 'Tom Birmingham'; 'Bernhardt, David L.'
Subject: sent today
Attachments: Lowhefner.pdf; McInnis.pdf

*Kiel Weaver
Staff Director
Water and Power Subcommittee
House Natural Resources Committee
1522 Longworth House Office Building
Washington, DC 20515
202--
202-225-4273 (fax)
kiel.weaver@mail.house.gov
naturalresources.house.gov*

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TODD YOUNG
CHIEF OF STAFF

U.S. House of Representatives
Committee on Natural Resources
Washington, DC 20515

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COLLEEN W. HANABUSA, HI

JEFFREY DUNCAN
DEMOCRATIC STAFF DIRECTOR

June 2, 2011

Mr. Ren Lowhefner
Regional Director
United States Fish and Wildlife Service
Federal Building
2800 Cottage Way, Room W-2606
Sacramento, California 95825-1846

Dear Mr. Lowhefner:

In light of information presented at a recent House Water and Power Subcommittee field hearing in Fresno, California, we seek information and materials from the United States Fish and Wildlife Service that are vital to the oversight duties of the House Natural Resources Committee (Committee).

The purpose of this information request is to precisely determine how federal agencies have allocated levels of incidental take for particular listed species amongst various activities that are carried out, funded, or authorized by federal agencies.

As you are aware, numerous incidental take statements may exist for any particular listed species for a wide variety of activities ranging from scientific research carried out or funded by the federal government, to any activity that requires federal agency approval that may affect a listed species. For example, it is presently our understanding that field sampling activities of the Interagency Ecological Program (IEP) for the Sacramento-San Joaquin Estuary are authorized to take up to 33,480 individuals of delta smelt annually. This level of authorized take stands in stark contrast to the adult delta smelt that were authorized to be taken in the respective three years for the coordinated operations of the Central Valley Project and the State Water Project from 2009 to 2011. This information request seeks to understand the rationale for the contrasting levels of take, given the devastating impacts that water restrictions had on the San Joaquin Valley.

Therefore, the Committee requests that the United States Fish and Wildlife Service produce the documents described in Section A below.

A. Documents and Items to be Produced

From June 18, 1996 to the present, any and all documents referring, relating, or pertaining, directly or indirectly, to:

1. The incidental take of the delta smelt;
2. Provisions of incidental take statements relating to the delta smelt or its critical habitat;
3. Communications referring or relating to the incidental take of the delta smelt; and
4. Document or information requests (including responsive materials) gathered and released in response to prior requests by other individuals, entities, organizations.

B. Definitions

1. The term "document" means any written, recorded, or graphic matter of any nature whatsoever, regardless of how recorded, and whether original or copy, including, but not limited to, the following: memoranda, reports, recorded notes, letters, notices, confirmations, receipts, checks, envelopes, presentations, pamphlets, brochures, interoffice and intra office communications, electronic mails (e-mails), notations of any type of conversation, telephone call, voice mail, phone mail, meeting or other communication, diaries, analyses, summaries, messages, correspondence, circulars, opinions, work sheets (and all drafts, preliminary versions, alterations, modifications, revisions, changes, and amendments of any of the foregoing, as well as any attachments or appendices thereto), and electronic, mechanical, and electric records or representations of any kind, and other written, printed, typed, or other graphic or recorded matter of any kind or nature, however produced or reproduced, and whether preserved in writing, film, tape, disk, videotape, or otherwise.
2. The term "communication" means each manner or means of disclosure or exchange of information, regardless of means utilized, whether oral, electronic, by document or otherwise, and whether face-to-face, in a meeting, by telephone, mail, e-mail, discussions, releases, personal delivery, or otherwise.
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C. Instructions

1. In complying with this document request, you are required to produce all responsive documents, materials, or items that are in your possession, custody, or control, whether held by you or your past or present agents, employees, representatives, subsidiaries, affiliates, divisions, partnerships, and departments acting on your behalf. You are also required to produce documents that you have a legal right to obtain, that you have a right to copy or to which you have access, as well as documents that you have placed in the temporary possession, custody, or control of any third party. No records, documents, data or information called for by this request shall be destroyed, modified, removed, transferred or otherwise made inaccessible to the Committee.
2. In the event that any entity, organization or individual denoted in this document request has been, or is also known by any other name than that herein denoted, the document request shall be read also to include them under that alternative identification.
3. Each document produced shall be produced in a form that renders that document capable of being printed or copied.
4. Documents produced in response to this document request shall be produced together with copies of file labels, dividers, envelopes, or identifying markers with which they were associated when this document request was served. Documents produced to this document request shall also identify to which paragraph from the document request such documents are responsive. Moreover, please include with your response, an index identifying each record and label (preferably by bates stamping) the documents. The Committee prefers, if possible, to receive all documents in electronic format.
5. It shall not be a basis for refusal to produce documents that any other person or entity also possesses documents that are non-identical or identical copies of the same document.
6. If any of the document requested information is available in machine-readable or electronic form (such as on a computer server, hard drive, CD, DVD, memory stick, or computer back-up tape), state the form in which it is available and provide sufficient

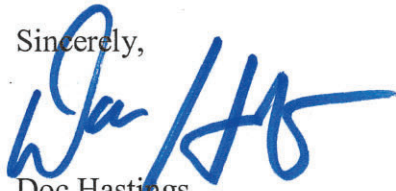
detail to allow the information to be copied to a readable format. If the information requested is stored in a computer, indicate whether you have an existing program that will print the records in a readable form.

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8. In the event that a document is withheld, in whole or in part, based on a claim of privilege, provide the following information concerning any such document: (a) the privilege asserted; (b) the type of document; (c) the general subject matter of the document; (d) the date, author and recipient; and (e) the relationship of the author and recipient to each other. Claims of privileges are considered under Committee on Natural Resources Rule 4(h) and, similar to all common-law privileges, are ultimately up to the discretion of each Committee.
9. If any document responsive to this document request was, but no longer is, in your possession, custody, or control, identify the document (stating its date, author, subject and recipient) and explain the circumstances by which the document ceased to be in your possession, custody, or control.
10. If a date or other descriptive detail set forth in this document request referring to a document is inaccurate, but the actual date or other descriptive detail is known to you or is otherwise apparent from the context of the request, you should produce all documents which would be responsive as if the date or other descriptive detail were correct.
11. This request is continuing in nature and applies to any newly-discovered information. Any record, document, compilation of data or information, not produced because it has not been located or discovered by the return date, shall be produced immediately upon location or discovery subsequent thereto.
12. Send all responsive documents and records to:

Kiel Weaver or Morgan Kim
Committee on Natural Resources
U.S. House of Representatives
1324 Longworth House Office Building
Washington, DC 20515.

We expect a complete written response to be provided to the Committee no later than July 5, 2011. Please contact either Kiel Weaver, Staff Director of the Subcommittee on Water and Power, or Morgan Kim, Chief Counsel & Director of Investigations of the Office of Oversight and Investigations, with any questions regarding this request, or to make arrangements for the production. Thank you for your prompt and personal attention to this matter.

Sincerely,

A handwritten signature in blue ink, appearing to read "Doc Hastings", written in a cursive style.

Doc Hastings
Chairman
Natural Resources Committee

A handwritten signature in blue ink, appearing to read "Tom McClintock", written in a cursive style.

Tom McClintock
Subcommittee Chairman
Water and Power

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COLLEEN W. HANABUSA, HI

JEFFREY DUNCAN
DEMOCRATIC STAFF DIRECTOR

June 2, 2011

Mr. Rodney McInnis
Regional Administrator
National Marine Fisheries Service
Southwest Regional Office
501 West Ocean Boulevard, Suite 4200
Long Beach, CA 90802-4213

Dear Mr. McInnis:

In light of information presented at a recent House Water and Power Subcommittee field hearing in Fresno, California, we seek information and materials from the National Marine Fisheries Service that are vital to the oversight duties of the House Natural Resources Committee (Committee).

The purpose of this information request is to precisely determine how federal agencies have allocated levels of incidental take for particular listed species amongst various activities that are carried out, funded, or authorized by federal agencies.

As you are aware, numerous incidental take statements may exist for any particular listed species for a wide variety of activities ranging from scientific research carried out or funded by the federal government, to any activity that requires federal agency approval that may affect a listed species. For example, it is presently our understanding that since 2000, the National Marine Fisheries Service has "accepted a 25% mortality of adult population as a result of ocean fisheries" for the effects of ocean harvest on Sacramento winter-run Chinook Salmon, while a much lower standard is established for the coordinated operations of the Central Valley Project and State Water Project. This information request seeks to understand the rationale for the contrasting levels of take.

Therefore, the Committee requests that the National Marine Fisheries Service produce the documents described in Section A below.

A. Documents and Items to be Produced

From June 18, 1996 to the present, any and all documents referring, relating, or pertaining, directly or indirectly, to:

- a. The incidental take of the Sacramento winter-run Chinook Salmon;
- b. Provisions of incidental take statements relating to the Sacramento winter-run Chinook Salmon or its critical habitat; and
- c. Document or information requests (including responsive materials) gathered and released in response to prior requests by other individuals, entities, organizations.

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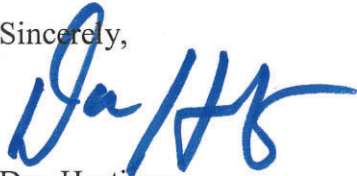
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Sincerely,

A handwritten signature in blue ink, appearing to read "Doc Hastings", written in a cursive style.

Doc Hastings
Chairman
Natural Resources Committee

A handwritten signature in blue ink, appearing to read "Tom McClintock", written in a cursive style.

Tom McClintock
Subcommittee Chairman
Water and Power

From: Jason Peltier

Sent: Friday, June 3, 2011 8:02 AM

To: 'Karen Clark'; 'Tony Coelho'; 'Bill Kahrl'; 'Carmela McHenry'; 'Carolyn Jensen'; 'David Bernhardt'; 'Doug Subers'; 'Ed Manning'; 'Gayle Holman'; 'Joe Findaro'; 'Sheila Greene'; 'Susan Ramos'

CC: 'Carmela McHenry'

Subject: note Feinstein comments focus on SJRiver

California water pact attacked by GOP congressmen

[Carolyn Lochhead, Chronicle Washington Bureau](#)

Friday, June 3, 2011

(06-03) 04:00 PDT Washington -- House Republicans representing the San Joaquin Valley pressed their attack on California's plan to restore water to fisheries and wildlife, holding a hearing Thursday on a bill that would gut a key bipartisan pact passed by the state Legislature in 2009 after decades of litigation.

The bill has environmental groups and Bay Area Democrats in an uproar, but it has an excellent chance of passing the GOP-controlled House this year - one of many areas from abortion limits to spending cuts where Republicans are moving aggressively to shift the direction of government.

In the Democratic-controlled Senate, however, the water bill faces strong opposition from California Sens. Dianne Feinstein and [Barbara Boxer](#), both Democrats, as well as opposition from the [Obama](#) administration.

"I strongly oppose this bill, which I believe is dramatic overkill," Feinstein said.

The question is whether any parts of the wide-ranging legislation would survive and begin to unravel the state's efforts to allocate scarce water to the competing demands of agriculture and the environment.

The hearing by the House subcommittee on Water and Power sought to bolster legislation by Rep. Devin Nunes, R-Alpaugh (Tulare County), and co-sponsored by Rep. Kevin McCarthy, R-Bakersfield, designed to divert more water to San Joaquin Valley farmers to rectify what the sponsors contend is a "man-made drought" that they say has devastated farmers, idled 250,000 acres of cropland and wreaked havoc on the economy.

The bill would kill a court-approved settlement to restore water to the San Joaquin River and undermine a multimillion-dollar water project to restore the Bay Delta and Northern California fisheries.

Committee Chairman Tom McClintock, R-Elk Grove (Sacramento County), said that despite a heavy snowpack this year that is running at 165 percent of normal, the state's farmers are getting only 75 percent of their contracted water.

The San Joaquin Valley is "ground zero" for the "deliberate creation of water shortages by governmental fiat and the abandonment of the government's responsibility to develop our water resources for the prosperity of our nation," McClintock said.

"Are you guys kidding?" asked Rep. John Garamendi, D-Walnut Grove (Sacramento County). "This is really, really terrible policy. If we want to start another water war, this will do it, guaranteed."

Cynthia Koehler, California water director for the Environmental Defense Fund, said the legislation threatens thousands of coastal fishing jobs and would undo hard-fought compromises that have put farmers and the environment on equal footing on water use.

Nine conservation groups, including the Sierra Club, Nature Conservancy, American Rivers and Defenders of Wildlife, wrote a letter to the committee objecting to the bill.

The wide-ranging legislation would overturn parts of the 1992 Central Valley Project Improvement Act, supersede the Endangered Species Act and state law, and repeal the 2009 San Joaquin River Restoration Settlement Act passed with bipartisan support after 18 years of litigation.

It also would put new controls on spending for the Central Valley Project Restoration Fund, which Republicans said has cost \$800 million so far with "no measurable effect" on improving the environment.

California Secretary for Natural Resources John Laird said in blistering testimony that the legislation would overturn carefully crafted compromises in the state and ignore a century of precedent that prevents Congress from meddling in state water issues.

The bill, Laird added, also would roll back thinking on water allocation to the mid-1990s, before fish populations "crashed" and before it became widely understood that current allocations of water in the Sacramento-San Joaquin River Delta are unsustainable.

By repealing the 2009 pact, Laird said the legislation would "almost certainly send that controversy back to court," setting back, probably by years, efforts to resolve the state's water issues.

State Senate President Pro Tem Darrell Steinberg, D-Sacramento, and Assembly Speaker John Pérez, D-Los Angeles, co-signed a letter opposing the bill, while Michael Connor, commissioner of the federal Bureau of Reclamation, said the legislation failed to "advance the spirit of cooperation and consensus that is essential to making progress on California water issues."

Bill to stop river project draws powerful foes

Posted at 10:12 PM on Thursday, Jun. 02, 2011

By Michael Doyle / Bee Washington Bureau

WASHINGTON – California officials and the Obama administration on Thursday strongly objected to a politically divisive bill that blocks San Joaquin River restoration efforts, casting the bill's long-term prospects into doubt.

Citing "very serious problems" with the bill authored by Rep. Devin Nunes, R-Visalia, administration officials warned against breaking apart the river restoration settlement that in 2006 ended an 18-year-long lawsuit pitting farmers against environmentalists.

"The bill would not only undo the very valuable restoration work committed to by all the settling parties, but would also ... pave the way for many more years of costly court battles," Interior Secretary Ken Salazar warned a House panel.

California Natural Resources Secretary John Laird echoed that warning, saying the bill would "almost certainly send the controversy back to court, where the consequences of litigation would be unknown."

As a statement, though, the San Joaquin Valley Water Reliability Act could succeed even if it dies in the Senate. Critics fear it might also propel over the finish line other California water provisions.

-  [Archive on San Joaquin River restoration](#)

Republicans specifically cast the legislation in partisan terms, repeatedly contrasting the GOP's farmer-friendly efforts with what Nunes described as "four years of neglect by the [previous] Democratic majority." The bill allows lawmakers to articulate a position, with various Republicans Thursday denouncing "uncompromising environmental groups" and "left-wing ideology."

"California's San Joaquin Valley is ground zero for what's gone wrong with federal water policy," declared Rep. Tom McClintock, R-Elk Grove, the chairman of the House water and power subcommittee.

Though the hearing was the first on Capitol Hill to consider the water legislation, lawmakers and witnesses spent at least as much time revisiting old feuds as on discussing the bill's details. At one point, Westlands Water District general manager Tom Birmingham and Rep. John Garamendi, R-Walnut Grove, clashed over water negotiations they had back in 1997.

This year's 38-page bill would stop the ambitious program that currently aims to return salmon to the San Joaquin River by Dec. 31, 2012. The bill also would lengthen irrigation contracts, curtail environmental protections in the Sacramento-San Joaquin Delta and provide farmers more water. "The pumps have to run," Nunes said, and "the San Joaquin River boondoggle has to end."

Working on a separate front, Nunes and his allies succeeded Thursday in stripping \$66 million in San Joaquin River restoration funds from a fiscal 2012 spending bill.

The Friant Water Users Authority and the Natural Resources Defense Council signed the river settlement in 2006. Without the agreement, negotiators reckoned that a federal judge would control the water decisions.

Barry Nelson of the Natural Resources Defense Council and Cynthia Koehler of the Environmental Defense Fund both cautioned Thursday that cracking the river settlement could undermine confidence in other water negotiations, particularly those underway through the Bay Delta Conservation Plan.

Neither Friant nor the NRDC were invited to testify Thursday. Instead, the subcommittee summoned farmer Kole Upton, a former Friant chairman who now opposes the river restoration plan. "The salmon restoration is behind schedule and the question should be asked whether this effort warrants the expenditure of so much public money," Upton said.

Bureau of Reclamation Commissioner Michael Connor acknowledged the Dec. 31, 2012, deadline for returning salmon to the river may slip, suggesting that "we are interested in looking at the schedule" for possible revisions.

The water bill is almost certain to pass the Republican-controlled House, possibly this summer.

Rep. Jim Costa, D-Fresno, said Thursday he will support the bill so that further negotiations can ensue.

Neither of California's two Democratic senators, Dianne Feinstein and Barbara Boxer, support the current bill. This complicates the bill's final passage, though Nunes says he's working with senators from other states.

Read more: <http://www.fresnobee.com/2011/06/02/2412695/bill-ending-river-project-draws.html#ixzz1OE1kuEe9>

S.J. River plan in peril

South Valley congressman wants more Delta water

 Print this Article  Email this Article

Text Size: **A** | **A** | **A**

By **Alex Breitler**
Record Staff Writer
June 03, 2011 12:00 AM

A south Valley congressman's latest effort to wring more water from the Delta would block a plan to restore the San Joaquin River and could upend a new state policy treating the environment and water supply as coequal values.

Rep. Devin Nunes, R-Visalia, told a House subcommittee Thursday that the federal government has broken a promise made in 1994 that it would not withhold any additional water from farms south of the Delta.

Legislation written by Nunes proposes sweeping changes to crank up the export pumps near Tracy.

Highlights

Here's what Rep. Devin Nunes' bill HR1837, the San Joaquin Valley Water Reliability Act, would do:

- Repeal the restoration plan for the San Joaquin River.
- Remove non-native striped bass from the list of Delta species to be protected under the federal Central Valley Project Improvement Act.
- Cap the amount of water that can be dedicated to fish and wildlife under that federal law.

- Direct the federal government not to distinguish between wild fish and hatchery-produced fish, despite behavioral differences.
- Revive the 1994 Bay-Delta Accord, a truce in the water wars that established how much water could be exported from the Delta. Under the Nunes plan, if the state and federal water projects abide by the terms of the accord, they'll be in compliance with the Endangered Species Act. Critics say this would shift the burden of saving species to non-project water users such as Delta farmers, upset the state's coequal goals of a reliable water supply and healthy ecosystem, and impede California's right to manage its own water.

"Everyone that has the real interest at heart of securing water reliability to the region between Modesto and Bakersfield knows the pumps have to run," Nunes said. "(Federal law) needs to be reformed, and the San Joaquin River boondoggle needs to be replaced."

But his legislation faces vigorous opposition from environmental groups, Delta farmers, the federal government and the state of California, which argues that the bill would trample over state law and upset more recent efforts to solve the Delta's problems.

Essentially, Nunes' bill shifts the burden of saving endangered species from the state and federal water projects to those who take water from upstream tributaries or from the Delta itself, said Tom Zuckerman, an attorney whose family farms the Delta. Landowners within the watersheds could be forced to give up water for south Valley landowners who rely on exported water.

"This legislation would turn 110 years of state rights on its ear," Zuckerman said this week.

Things have changed since the 1994 Bay-Delta Accord, a truce of sorts that established on a temporary basis how much water could be taken from the Delta. For one, several species of native fish have collapsed toward extinction. California water officials have determined much larger freshwater flows through the Delta are needed to save them.

Nunes has attempted to increase exports from the Delta multiple times in recent years, arguing that efforts to save the 3-inch Delta smelt caused a huge spike in unemployment.

It's unclear how far this latest legislation will go. Opponents fear that even if the bill itself fails, bits and pieces could be used as negotiating tools during budget talks and perhaps be attached to other bills.

Thursday's subcommittee hearing - the first for Nunes' bill - featured many of the same arguments that have been made for decades, with the term "water wars" lobbed around the room like rhetorical hand grenades.

"There is no war," Nunes said. "There is only surrender on behalf of San Joaquin Valley residents. The farmers surrendered in 1992, the farmers surrendered in 1994, the farmers surrendered with the San Joaquin River settlement.

"Really, you only have a war from one side. And that's from the radical environmental groups that are massacring the people that live in our communities. Complete annihilation, where we have pockets of unemployment that at some point reach 50 percent in some communities."

Despite Nunes' fiery language, the University of the Pacific's Business Forecasting Center determined in 2009 that most of the Valley's high unemployment could be blamed on the collapse of the construction industry, not a lack of water.

As for expensive plans to restore the San Joaquin, a federal Bureau of Reclamation official Thursday admitted that delay may be necessary.

But eliminating the program outright, Commissioner Michael Connor said, would probably mean more lawsuits on top of the 18 years of litigation already in the books.

Contact reporter Alex Breitler at (209) 546-8295 o

From: Jason Peltier

Sent: Friday, June 10, 2011 3:06 PM

To: 'Tom Birmingham'; joe.findaro@akerman.com; 'David Bernhardt'; 'Tony Coelho'; 'Bill Kahl'

Subject: Valley Maps

Early district maps reveal overhaul of Valley politics

Posted at 10:59 AM on Friday, Jun. 10, 2011

By John Ellis / The Fresno Bee

A new citizens commission charged with taking over the once-a-decade redrawing of California's congressional, Assembly and state Senate districts today proposed a radical overhaul of the region's political landscape.

The California Redistricting Commission's [first set of draft maps](#) would bring new political representatives to Fresno County while sending others away to the south or north.

But the boundaries are not set in stone.

The map proposals are the commission's first release. There will now be additional public meetings -- including one June 23 in Fresno -- before commissioners release updated maps. The deadline for final maps is Aug. 15.

"It's important to remember that this is the first step," Visalia Republican Devin Nunes said.

Still, the local political world is buzzing over the maps and the potential implications. Among them: -- Fresno County would be represented by five members of Congress.

Three of those districts are already in the county. They are currently represented by Nunes in the 21st Congressional District, Fresno Democrat Jim Costa in the 20th District and Merced Democrat Dennis Cardoza in the 18th District.

But the mountains would bring two new districts, one currently held by Bakersfield Republican Kevin McCarthy and the other by Elk Grove Republican Tom McClintock.

These districts are already causing debate because, for instance, Squaw Valley would be represented by McCarthy, who is based more than a hundred miles south in Bakersfield, and Shaver Lake would be represented by McClintock, whose district is based nearly 200 miles to the north in Placer County.

"The folks that are living in those communities are connected directly with the Valley," Nunes said. "They do their business in the Valley."

His recommendation: Show up at the Fresno hearing and "make their voice heard."

-- The city of Fresno would be represented by two members of Congress rather than the current three.

As it is now, Atwater Republican Jeff Denham represents 40% of the city, Costa 40% and Nunes 20%. The new plan would have Cardoza's district covering about two-thirds of the city and Nunes' the remaining third.

-- At first glance, Costa's district would look much like it does now. But on closer inspection, the district would no longer represent any part of Fresno.

Republicans are excited about the possibilities because the Fresno parts of the district contained large Democratic populations.

-- Denham is long gone from the region. His district, which currently runs from Modesto and Stanislaus County, south through the foothills and mountains to Madera and Fresno, would instead take in all of Stanislaus County and a bit of southwestern San Joaquin County.

-- As jumbled as the congressional lines are, the state Senate lines are even more twisted.

Fresno County will be divided into three districts, with two running from Fresno to the south and a third running from Fresno north through the foothills, where it also takes in most of Placer County.

Clovis would go from being in a district based in Modesto to one based in Bakersfield.

Half of Fresno County would be represented by Bakersfield-based districts, one currently held by Republican Jean Fuller and the other currently held by Democrat Michael Rubio.

-- The first draft's foothill state Senate district, which runs north 200 miles from Fresno, would likely have its major population base in the city. It would include about two-thirds of Fresno.

-- The state Assembly proposal is the easiest to understand. Fresno County would essentially be divided in two -- east and west. The western seat is currently held by Fresno Democrat Henry T. Perea, and the eastern seat by Fresno Republican Linda Halderman.

Tulare County -- as well as a bit of northern Kern County -- would be the district currently held by Tulare Republican Connie Conway. The proposal is more compact than her current district, which stretches across the high desert all the way to Needles, a San Bernardino County town on the Arizona border.

The district currently held by Hanford Democrat David Valadao would no longer include Fresno County. It would be in Kings and Kern counties.

The redistricting commissioners -- five Democrats, five Republicans and four who are from smaller political parties or unaffiliated with any party -- must follow certain rules in drawing the lines. Among them are ensuring that minorities are not disenfranchised. They also should try to keep communities together and draw districts that are contiguous.

Nunes noted that the commission was likely limited by Kings and Merced counties, both of which must adhere to the federal Voting Rights Act.

That limits how they can be drawn and any plan must receive clearance from the Department of Justice to ensure there is no effort to dilute the minority vote.

Read more: <http://www.fresnobee.com/2011/06/10/2422196/first-draft-of-new-calif-political.html#ixzz1Oug0BU6B>

From: Nelson, Damon
Sent: Friday, June 10, 2011 3:52 PM
To: 'tbirmingham@westlandswater.org'
Subject: Re: Letter to Senator Feinstein

Damn good letter.

Damon Nelson
Deputy Chief of Staff & Legislative Director
Congressman Devin Nunes
Sent from my BlackBerry Wireless Handheld

From: Tom Birmingham [mailto:tbirmingham@westlandswater.org]
Sent: Friday, June 10, 2011 05:59 PM
To: 'Watts, John (Feinstein)' <John_Watts@feinstein.senate.gov>
Cc: Weaver, Kiel; Nelson, Damon; Murray, Jaclyn; Larrabee, Jason; D'Adamo, Dee Dee; joe.findaro@akerman.com <joe.findaro@akerman.com>; 'Bernhardt, David L.' <DBernhardt@BHFS.com>
Subject: Letter to Senator Feinstein

John,

Attached is a letter to Senator Feinstein regarding H.R. 1837. Please provide a copy to the Senator. The original will follow by mail.

Thank you,
Tom

From: Jason Peltier

Sent: Saturday, June 11, 2011 6:55 AM

To: joe.findaro@akerman.com; 'Ed Manning'; 'Tony Coelho'; 'David Bernhardt'; 'Tom Birmingham'; 'Bill Kahrl'; 'Carolyn Jensen'

Subject: Re-mapping clips

District maps draw a new political landscape -- California's new voting districts could put Democrats within reach of as many as five more seats in Congress and enough in the state Legislature for the two-thirds majority needed to raise taxes, according to Democratic and Republican analysts. **EVAN HALPER** and **RICHARD SIMON** in the [Los Angeles Times](#) -- 6/11/11

California Legislature may see more swing districts under draft political maps -- California's intensely partisan political system could see more swing districts, new faces and the most significant shake-up in decades under draft legislative and congressional maps released Friday by the state's redistricting commission. **JIM SANDERS** and **PARESH DAVE** in the [Sacramento Bee](#) -- 6/11/11

New state political maps propose more Inland seats -- Inland Southern California would pick up two new congressional seats, a Senate district and several Assembly seats in draft plans released Friday by the independent panel in charge of redrawing the state's political landscape. **JIM MILLER, BEN GOAD** and **DUANE W. GANG** in the [Riverside Press](#) -- 6/11/11

Release of new maps creates political 'tsunami' -- Some incumbents called their new proposed districts "baffling." Latino leaders called the maps a disaster. But political reformers characterized them as a vast improvement from the old, party-driven system. **LISA VORDERBRUEGGEN** and **TRACEY KAPLAN** in the [San Jose Mercury](#) -- 6/11/11

Political earthquake roils California delegation -- A redistricting panel has demolished California's exquisitely gerrymandered congressional map, ushering in the prospect of a massive turnover in the state's delegation and imperiling the careers of some of Capitol Hill's most powerful pols. **ALEX ISENSTADT** [Politico](#) -- 6/11/11

Draft California congressional maps promise more competition -- Colleagues become competitors and political hometowns get unsettled under a proposed new congressional district map unveiled Friday. **MICHAEL DOYLE** in the [Sacramento Bee](#) -- 6/11/11

New draft redistricting map hurts Rep. Sanchez -- While the maps don't dismantle Sanchez's Democratic Latino district as radically as did an initial rough draft, they would diminish Democrats' advantage in voter registration for the central county seat. **MARTIN WISCKOL** in the [Orange County Register](#) -- 6/11/11

Redistricting by Citizens Has Test in California -- While other states have experimented with ways to minimize the political horse-trading — and retribution — that have become part and parcel of redistricting, not one has gone quite as far as California. **ADAM NAGOURNEY** in the [New York Times](#) -- 6/11/11

Redistricting should make elections less predictable -- The new California Citizens Redistricting Commission's draft maps have achieved at least one of the objectives that prompted voters to create the panel: They took partisan interests out of the equation. **MARTIN WISCKOL** in the [Orange County Register](#) -- 6/11/11

Bay Area stable in draft of state political map -- Most of Northern California's political landscape would remain comparatively stable, analysts said. San Francisco, however, would become one state Senate district instead of being split between two districts. **JOE GAROFOLI, CARLA MARINUCCI** in the [San Francisco Chronicle](#) -- 6/11/11

New district maps would reshape the Valley -- The San Fernando Valley's political landscape was shaken Friday as elected officials scrambled to stake early claims within newly proposed congressional and state legislative boundaries, and analysts forecast pitched election battles in 2012. **DAKOTA SMITH** in the [Los Angeles Daily News](#) -- 6/11/11

Early district maps reveal overhaul of Valley politics -- Fresno County, for instance, would be represented by five different congressmen. That would give the county -- population 930,450 -- more members of Congress than 18 states. **JOHN ELLIS** in the [Fresno Bee](#) -- 6/11/11

Baca weighs run for proposed new congressional seat -- Rep. Joe Baca, D-San Bernardino, says Democratic Party officials have asked him to consider running for a proposed new congressional seat that would represent Ontario, Chino, Montclair, Pomona and Rancho Cucamonga. **JAMES RUFUS KOREN** in the [Inland Daily Bulletin](#) -- 6/11/11

Democratic challenger to Dreier 'totally emboldened' by new district lines -- A potential Democratic challenger to Rep. David Dreier said he was "totally emboldened" by the new draft congressional maps that carve out some of the conservative strongholds of Dreier's current seat. Assemblyman Anthony Portantino (D-La Cañada Flintridge) has been raising money for months to challenge Dreier in 2012. **SHANE GOLDMACHER** LA Times [PolitiCal](#) -- 6/11/11

Negrete McLeod to run for Congress: "I'm in, I'm in, I'm in, I'm in" -- Within hours of seeing the draft maps of new congressional districts in California, state Sen. Gloria Negrete McLeod declared she is running for Congress. **SHANE GOLDMACHER** LA Times [PolitiCal](#) -- 6/11/11

Councilman Tony Cardenas announces run for new congressional seat -- Hours after a state commission released the first round of new congressional district maps, Los Angeles City Councilman Tony Cardenas announced his intention to run for one of the newly drawn seats in 2012. **ANTHONY YORK** in the [Los Angeles Times](#) -- 6/11/11

Lynn Woolsey is NOT happy with redistricting map -- Rep. Lynn Woolsey, D-Petaluma, is the first Bay Area House member to come out swinging against the first-draft maps released today by the California Citizens Redistricting Commission. **JOSH RICHMAN** [Politico](#) -- 6/11/11

Three Sacramento-area Assembly Democrats land in same district -- The Assembly maps approved today, which will serve as a starting point for further public comment, also have Democratic Assembly members Roger

Dickinson and Richard Pan bunched with Davis Democratic Assemblywoman Mariko Yamada in a Sacramento-West Sacramento-Davis district. **DAN SMITH** SacBee [Capitol Alert](#) -- 6/11/11

New redistricting maps show South Bay losing seats in Congress, Assembly -- New redistricting maps released today will drastically change the face of the South Bay's political landscape as the region loses two congressional seats, while the Palos Verdes Peninsula is more closely linked to its coastal neighbors. **ART MARROQUIN** in the [Torrance Daily Breeze](#) -- 6/11/11

New redistricting maps would take SLO County away from McCarthy -- Republican Rep. Kevin McCarthy would no longer represent San Luis Obispo County in Washington and Democratic Rep. Lois Capps would likely face a tougher fight for re-election if tentative redistricting maps released this afternoon hold up. **BOB CUDDY** [San Luis Trib](#) -- 6/11/11

Proposed new political maps would make Central Coast a congressional battleground -- An analysis of political data shows that, although it would have a slight Democratic tilt in voter registration, the proposed district would be a political toss-up. **TIMM HERDT** in the [Ventura Star](#) -- 6/11/11

From: Costa, Jim

Sent: Sunday, June 12, 2011 2:26 AM

To: 'tbirmingham@westlandswater.org'; [REDACTED]; [REDACTED]

Subject: Re: Letter to Senator Feinstein

Tom-- I think it's a good letter !!!!

Any response ?? Let's chat monday afternoon when I get back into DC Jim

Congressman Jim Costa

From: Tom Birmingham [mailto:tbirmingham@westlandswater.org]

Sent: Friday, June 10, 2011 05:59 PM

To: 'Watts, John (Feinstein)' <John_Watts@feinstein.senate.gov>

Cc: Weaver, Kiel; Nelson, Damon; Murray, Jaclyn; Larrabee, Jason; D'Adamo, Dee Dee; joe.findaro@akerman.com <joe.findaro@akerman.com>; 'Bernhardt, David L.' <DBernhardt@BHFS.com>

Subject: Letter to Senator Feinstein

John,

Attached is a letter to Senator Feinstein regarding H.R. 1837. Please provide a copy to the Senator. The original will follow by mail.

Thank you,

Tom

From: joe.findaro@akerman.com
Sent: Tuesday, June 28, 2011 11:41 AM
To: TBirmingham@westlandswater.org; DBernhardt@BHFS.com
Subject: Fwd: Dinner - tonight

Begin forwarded message:

From: "Butler, Elizabeth (LAA-DC)" <elizabeth.butler@akerman.com>
Date: June 28, 2011 2:30:15 PM EDT
To: "Findaro, Joe (OC-DC)" <joe.findaro@akerman.com>
Subject: Dinner - tonight

Your reservation is set. Party of 5 at 7pm.

McCormick and schmick on k

1652 K Street Northwest
Washington D.C., DC 20006-2801
(202) 861-2233

Elizabeth Butler

Legislative Administrative Assistant
Akerman Senterfitt LLP | 750 9th Street, N.W. | Suite 750 | Washington, DC 20001
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From: Tom Birmingham
Sent: Saturday, July 30, 2011 7:56 PM
To: 'Dave Puglia'; 'Tom Nassif'
CC: 'Ed Manning'; joe.findaro@akerman.com; 'Bernhardt, David L.'; 'Don Peracchi'
Subject: FW: Meeting Request - Sen. Feinstein

The following is the email I received from Senator Feinstein's office.

From: Davis, Bryer (Feinstein)
Sent: Saturday, July 30, 2011 3:17 PM
To: 'Tom Birmingham'; Watts, John (Feinstein); Peterson, James (Feinstein)
Cc: joe.findaro@akerman.com
Subject: RE: Meeting Request - Sen. Feinstein

Tom, Senator Feinstein's schedule is very much in the air next week due to the Senate's schedule. She is happy to meet with you but has suggested finding a time in September, when she's back in DC after the August recess. I will touch base with you next month to find a time.

From: Karen Clark

Sent: Thursday, August 4, 2011 12:09 PM

To: Tony Coelho; Bill Kahrl; Carmela McHenry; Carolyn Jensen; David Bernhardt; Doug Subers; Ed Manning; Gayle Holman; Jason Peltier; Joe Findaro; Sheila Greene; Susan Ramos

Subject: No PR/Legislation Conference Call Tomorrow

Everyone,

Since Tom is on vacation, we will not have a PR/Legislation conference call tomorrow.

Have a good weekend!

~Karen

Karen Clark

Executive Assistant to Thomas W. Birmingham

Westlands Water District

P.O. Box 6056

Fresno, CA 93703

(o) 559.241.6234

(f) 559.241.6277

kclark@westlandswater.org

From: Jason Peltier

Sent: Tuesday, August 16, 2011 8:40 AM

To: 'Karen Clark'; 'Tony Coelho'; 'Bill Kahl'; 'Carmela McHenry'; 'Carolyn Jensen'; 'David Bernhardt'; 'Doug Subers'; 'Ed Manning'; 'Gayle Holman'; 'Joe Findaro'; 'Sheila Greene'; 'Susan Ramos'

Subject: press on districts

California Policy and Politics This Morning

California redistricting panel OKs new boundaries -- For the first time in state history, an independent group of citizens has redrawn California's political districts, approving a set of maps Monday that are expected to help Democrats garner more power in the solidly blue state. **MARISA LAGOS** in the [San Francisco Chronicle](#) **PATRICK MCGREEVY** and **RICHARD SIMON** in the [Los Angeles Times](#) **DAN WALTERS** SacBee [Capitol Alert](#) **LISA VORDERBRUEGGEN** [Political Blotter](#) **PATRICK MCGREEVY** in the [Los Angeles Times](#) **JIM MILLER** in the [Riverside Press](#) **TIMM HERDT** in the [Ventura Star](#) **JOHN MYERS** [Capitol Notes](#) -- 8/16/11

Redistricting panel member says decisions tainted by politics -- Redistricting Commissioner Michael Ward was the only member of the panel to vote against all the new legislative maps Monday and hours later he accused his colleagues of violating their legal requirements by making some decisions based on political considerations. **PATRICK MCGREEVY** in the [Los Angeles Times](#) -- 8/16/11

Redistricting plan sets off scramble for congressional seats -- A citizens panel's approval Monday of new boundaries for congressional districts in California set off a series of announcements by candidates jockeying for a place in the new order. **PATRICK MCGREEVY** in the [Los Angeles Times](#) -- 8/16/11

California GOP will challenge new senate maps -- The California Republican Party announced it will file a petition Tuesday and seek a voter referendum of the new state senate maps, and perhaps the congressional maps, adopted this morning by the California Citizens Redistricting Commission. **LISA VORDERBRUEGGEN** [Political Blotter](#) **PATRICK MCGREEVY** and **RICH SIMON** in the [Los Angeles Times](#) **JIM SANDERS** in the [Sacramento Bee](#) -- 8/16/11

From: Bernhardt, David L.

Sent: Wednesday, September 14, 2011 1:55 PM

To: Tom Birmingham

Subject: Out of Office AutoReply: Westlands Drainage Complaint

Thank you for your message. I will be out of the office and unreachable by either email or phone through September 20. If you need assistance before the 20th, please contact either Jon Hrobsky or Ryan Smith at 2022967353.

Thanks,
David

From: Jason Peltier

Sent: Tuesday, September 27, 2011 9:58 AM

To: 'Tom Birmingham'; David Bernhardt; 'Sims, Steven O.'; Allison Dvorak Febbo; Ara Azhderian; B Walthall; Bill Kahrl; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Ed Manning; frances. mizuno; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: summary of Wanger. put out by the Coalition for a Sustainable Delta

Judge Wanger orders revision of federal salmon plan

In a federal court ruling in Fresno, Judge Oliver Wanger ruled that key parts of the federal government's biological opinion meant to protect winter- and spring-run chinook salmon and Central Valley steelhead in the California Delta were invalid due, in part, to a reliance on faulty science. The ruling will likely force the federal government to rewrite significant portions of the 844-page Biological Opinion for salmon in the Delta.

The 270-page decision addressed the claims brought by the State of California Department of Water Resources (DWR) and the so-called "export plaintiffs" (including CVP and SWP contractors, as well as the Coalition for a Sustainable Delta) separately from the claims brought by the San Joaquin River plaintiffs. Below is a summary of the court's holdings with respect to the claims by DWR and the export plaintiffs. The court ruled in the water users' favor on the following claims:

- The National Marine Fisheries Service (NMFS) acted unlawfully by relying on unscaled data regarding salvage at the export facilities rather than scaling the data to the population size. The court held that when trying to discern trends from salvage data, "an obvious 'confounding variable' is population size." It further explained that "[a] trend observed in data that is unscaled for population size may change or completely disappear when scaled for population size," concluding that NMFS committed "a clear scientific error."
- NMFS failed to provide a basis for its determination that the winter-run Chinook salmon is at "high risk" of extinction. The court noted that the species does not meet the "high risk" definition set forth in an article by NMFS scientist Stephen Lindley and others, and that "it appears that the record does not support a high risk finding..." The court characterized NMFS's determination as "completely unsupported by the record, constituting 'clear error.'"
- NMFS's Orca jeopardy analysis is unlawful due to the agency's failure to take into consideration its Orca Salmon Harvest biological opinion, issued prior to the CVP and SWP biological opinion. In the Orca Salmon Harvest biological opinion, NMFS determined that a reduction in the availability of salmon as a prey item for the Orca is not likely to jeopardize the species whereas, in the CVP and SWP biological opinion, NMFS determined that a reduction in the availability of salmon as a prey item for the Orca is likely to jeopardize the species. The court held that on remand NMFS must explain how these determinations can be reconciled.

- The record does not support NMFS's conclusion that CVP and SWP operations cause indirect mortality caused by exotic species, pollution, and food limitations. For example, the court characterized the link between CVP and SWP operations, the presence of exotic species, and mortality of the listed species as "pure speculation."
- The record provides marginal support for a component of the RPA that imposes an inflow to export ratio on the San Joaquin River from April 1 through May 31, but does not provide support for the specific 4:1 ratio imposed in above normal and wet years. The court held that, in violation of the Section 7 Consultation Handbook, NMFS failed to provide a thorough explanation of why this RPA component is essential to avoid jeopardy or adverse modification. The court went on to state that fulfilling this obligation in this instance "is heightened in light of the weak (arguably equivocal) evidence support the imposition of any ratios at all."
- The record provides nominal support for a component of the RPA that restricts reverse flows on Old and Middle rivers from January 1 through June 15, but NMFS must explain "the necessity of the specific flow prescriptions imposed, which are derived primarily from [Particle Tracking Model] simulations, a method that is indisputably an imperfect predictor of salmon behavior."
- NMFS failed to provide any record explanation for the specific levels of salvage identified by the agency as the trigger of an RPA component that limits combined CVP and SWP exports during the period November 1 to December 31. The court noted that plaintiffs "raise serious questions related to the need to scale the triggers to the overall size of the salmonid populations they aim to protect."
- NMFS failed to comply with the requirements of its own regulations when formulating the RPA by failing to determine whether the RPA is consistent with the purposes of the underlying action, whether the RPA is within the action agency's legal authority and jurisdiction, and whether the components of the RPA are essential to avoid jeopardy or adverse modification.
- There is a lack of record support for NMFS's position that certain actions at the SWP and CVP export facilities to reduce mortality of salmon, steelhead, and green sturgeon are feasible.

The court affirmed the federal agency's jeopardy determination at the same time that it held that the biological opinion is arbitrary, capricious, and unlawful. It remanded the biological opinion to NMFS. Like the court's earlier decision on the delta smelt Biological Opinion, this decision is likely to be appealed.

From: Tom Birmingham
Sent: Friday, December 2, 2011 9:12 AM
To: 'Nelson, Damon'
CC: 'Gary Sawyers'; 'Bernhardt, David L.'
Subject: RE: Can you look at this?

Damon,

I agree that this has the potential to cause great mischief. I am asking Dave Bernhardt to look at the issue and work with you on developing an appropriate strategy to address this process.

Tom

From: Nelson, Damon [mailto:Damon.Nelson@mail.house.gov]
Sent: Thursday, December 01, 2011 2:22 PM
To: Thomas Birmingham (tbirmingham@westlandswater.org); Gary Sawyers (gsawyers@sawyerslaw.com)
Subject: Can you look at this?

It seems like this would be of huge concerns....

<http://yosemite.epa.gov/sab/sabproduct.nsf/MeetingCal/D22D571CB50BCC5B8525793D0078EDCD?OpenDocument>

Damon Nelson
Deputy Chief of Staff & Legislative Director
Congressman Devin Nunes
Office: (202) 225-2523

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From: Nelson, Damon
Sent: Friday, December 2, 2011 9:14 AM
To: Tom Birmingham
CC: 'Gary Sawyers'; 'Bernhardt, David L.'
Subject: RE: Can you look at this?

It is imperative that someone is on the call on Monday. That way you are listed as being on the call and you can participate in the comment period that will be open after. The fear is they will use this to revamp the value of water nationwide. With the group on the board, I'm sure they will price environmental water and the most valuable.

From: Tom Birmingham [mailto:tbirmingham@westlandswater.org]
Sent: Friday, December 02, 2011 11:12 AM
To: Nelson, Damon
Cc: 'Gary Sawyers'; 'Bernhardt, David L.'
Subject: RE: Can you look at this?

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From: Nelson, Damon

Sent: Friday, December 2, 2011 10:16 AM

To: Thomas Birmingham (tbirmingham@westlandswater.org); Gary Sawyers (gsawyers@sawyerslaw.com); 'Bernhardt, David L.'

Subject: FW: Passcode for Monday's Call?

-----Original Message-----

From: Carpenter.Thomas@epamail.epa.gov [<mailto:Carpenter.Thomas@epamail.epa.gov>]

Sent: Friday, December 02, 2011 12:14 PM

To: Nelson, Damon

Subject: Re: Passcode for Monday's Call?

Thank you for your interest in the December 5, 2011 Environmental Economics Advisory Committee Augmented for the Consideration of the Value of Water to the U.S. Economy teleconference on Estimating the Value of Water in the U.S. Economy. The call is scheduled from 12:30pm to 5pm (EST).

The call-in number is: 866- [REDACTED]
access code 202 [REDACTED]

Members of the public are invited to listen to the SAB deliberations.

The agenda and meeting materials are available on the SAB web page and may be found at:

http://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr_activites/Value%20of%20Water?OpenDocument

Please click the "advisory meeting and report development" tab at this link:

Regards,
Tom Carpenter

Thomas Carpenter
Designated Federal Officer
Science Advisory Board (MC-1400R)
1200 Pennsylvania Ave, NW
Washington, DC 20460
Ph 202-564-4885
Fax 202-565-2098
email: Carpenter.thomas @epa.gov

From: Tom Birmingham
Sent: Friday, December 2, 2011 5:48 PM
To: 'Bernhardt, David L.'
CC: 'Gary Sawyers'; 'Nelson, Damon'
Subject: FW: Passcode for Monday's Call?

David,
Will you be able to get on this call on behalf of Westlands?
Tom



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Fax 202-565-2098
email: Carpenter.thomas@epa.gov

From: Nelson, Damon
Sent: Friday, December 2, 2011 6:24 PM
To: 'tbirmingham@westlandswater.org'; 'DBernhardt@BHFS.com'
CC: 'gsawyers@sawyerslaw.com'
Subject: Re: Passcode for Monday's Call?

David and I talked earlier today. he is going to make sure you guys are covered on the call. I'm going to join too.

Damon Nelson
Deputy Chief of Staff & Legislative Director
Congressman Devin Nunes
Sent from my BlackBerry Wireless Handheld

----- Original Message -----
From: Tom Birmingham [<mailto:tbirmingham@westlandswater.org>]
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email: Carpenter.thomas @epa.gov

From: Jason Peltier

Sent: Thursday, December 22, 2011 11:29 AM

To: T Birmingham (tbirmingham@westlandswater. org); Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: San Joaquin County Delta Stakeholders Coalition

I had not seen this.... We can agree with the six points of the resolution. There is no, no to new conveyance.

<http://blogs.esanjaquin.com/san-joaquin-river-delta/files/2011/12/Deltaresolution.pdf>

From: Walthall, Brent

Sent: Friday, December 23, 2011 6:12 AM

To: Jason Peltier

CC: T Birmingham (tbirmingham@westlandswater.org); Allison Dvorak Febbo; Ara Azhderian; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Creel, Curtis; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLOYD Fryer; Martin McIntyre; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; Valerie Connor

Subject: Re: San Joaquin County Delta Stakeholders Coalition

Kern County supervisor Ray Watson worked on this and we helped him a bit. These 6 points reflect two years of intermittent discussions

On Dec 22, 2011, at 1:33 PM, "Jason Peltier" <jpeltier@westlandswater.org> wrote:

I had not seen thisâ€¹. We can agree with the six points of the resolution. There is no, no to new conveyance.

<http://blogs.esanjoaquin.com/san-joaquin-river-delta/files/2011/12/Deltaresolution.pdf>

From: Jason Peltier

Sent: Wednesday, December 28, 2011 9:41 AM

To: T Birmingham (tbirmingham@westlandswater. org); Jerry Meral; Cowin, Mark; Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: Outstanding BDCP Issues

Attachments: BDCP Outstanding issues of last March.PDF

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It is interesting and a bit depressing to consider what the top tier issues were on March 21, 2011.

RESOLUTION OF OUTSTANDING BDCP ISSUES
3.21.11 draft

The next version of this memo will include more opportunities for public involvement. Chuck Gardner also needs to review for timeline and budget considerations.

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The discussion of each issue includes a brief description of the issue, the steps needed to resolve it, the participants in each phase of the resolution, and the timeline for resolution. A lead agency responsible to the Executive Committee and Management Committee is suggested.

HIGHEST PRIORITY ISSUES

BIG 6 OPERATION ISSUES AND RELATED EFFECTS ANALYSIS CHANGES

Agreement on clearly defined changes in proposed operations, additional modeling and any other type of analysis regarding changes in proposed operations, and baseline/existing conditions. DWR

March 25 Agencies brief contractors on water supply impacts of Big 6 changes, except X2
March 26. Agencies provide same briefing, but with environmental elements included, to NGOs, counties,
March 27 Briefing for Sac and SJ and Delta water agencies and interests not part of BDCP
April 6 Executive Committee approves Big 6 changes for publication on website for public comment

Agreement on X2 implementation protocol. FWS

April 1. Agencies brief NGOs and Contractors technical people on environmental and water supply aspects of proposed X2 experiment.
April 7 comments from NGOs and contractors received
April 12 agencies modify X2 proposal to reflect comments
April 21 Executive Committee reviews and approves X2 proposal
April 22 X2 proposal posted on website

Agreement on any other changes/work needed on Effects Analysis in response to review of the current draft. DWR

March 24. Present plan to Management Committee of how to include Big 6 in effects analysis, including timeline. Moon, Cylinder, Gardner, Nemeth, Milligan to prepare plan. Include milestones, dates, etc.

(date) Consultants include Big 6 in effects analysis, including X2 after approval

Agreement on how and when science review will be conducted. Focus on methods and effects analysis. DWR

March 24. DWR working with other agencies and contractors prepare request to science panel and NRC to undertake joint review of these two elements. Include budget, timeline, expected results.

(date) Science panel given charge to review material

(date) meeting of science panel

(date) report of Science Panel

(date) modification of documents based on science panel report

Baseline description and modeling needs DWR

March 22: DWR and Contractors come to agreement on proposed description and modeling approach
March 25; include Moose and Ebbin in a meeting to discuss with Milligan and other federal agency reps, negotiate any changes on approach and present proposed approach
March 26 Meeting with NGOs, Delta and other water agencies to review proposed approach
April 6 Executive Committee discussion and agreement on baseline and modeling
April 7 Baseline and modeling decisions posted on website for public comment

Method issue resolution DWR

March 14 Moon work with SAIC, Ron Milligan and Russ Stein to identify list of issues we already know will need resolution by March 23, share with fish agencies and NGOs and ask for their quick list of additions by March 30;
Moon work with Milligan, Stein, Ebbin and SAIC/ICF on list of options for resolution;
April 6 present to Executive Committee for discussion;
(date) adopt agreed upon approach by this date]

Define and develop schedule for completion of refinements needed to the Effects Analysis as a result of the decisions above re Big 6 operations, baseline and methods. DWR

March 21 Moon/ Milligan/ Stein work with SAIC, ICF and Chuck Gardner, to be shared with Management Team
April 7 Presentation to NGOs, Delta and other water agencies and interests
April 21 present to Executive Committee for decision

Big 6 issues other than Fall X2, OMR, and HORB. NMFS, FWS.

March 24. Discuss at Management Committee and in subsequent conference call with all agencies
April 1 Meet with NGOs in San Francisco to discuss approaches to these issues
Follow up based on outcome of meeting with work plan and timeline.

REGULATORY COVERAGE FOR CONTRACTORS ("PERMITTEE" ISSUE). NRA

March 25. Contractors and NGOs to present rationale to Meral
March 23. Discuss at 5 agencies
March 25 receive NGO position on this issue
March 30 Meeting with FWS, NMFS, DFG and contractors to discuss
April 9 Proposed position to Brown Administration

ADAPTIVE RANGE FOR WATER OPERATIONS; ADAPTIVE MANAGEMENT PROGRAM. DWR

These two subjects will be separated in the next draft into two different issues.

March 25 Moon and Ebbin talk to Carl Wilcox, Chuck Hanson and Armin Munevar.
April 1 Conceptual options paper prepared by Ebbin
April 8 DWR and Contractors develop a proposal
April 15 5 agencies consider and revise proposal
April 20 Meeting with NGOs, Delta Interests, upstream water agencies to discuss proposal
Meetings with Contractors, 5 agencies, NGOs
May 1 Executive Committee approves final proposal

NEAR-TERM OPERATIONS. DWR.

Need to settle on how to describe and include in Effects Analysis; and what terms and conditions will be included in the permit

March 26 Cylinder and Ebbin prepare a short set of bullets on options of having a specified near-term operation
April 1 discuss options with agencies and contractors
April 5 Prepare proposal on near term operations
April 12 Meet with regulatory agencies, NGOs, Delta counties, etc. to discuss proposal
April 21 Adoption of recommended option by Executive Committee

ALTERNATIVES TO BE CONSIDERED IN THE BDCP AND THE EIR/EIS. DWR.

The task is to develop a set of alternatives which will be considered in these documents. This will include a project description, preferred alternative, and other alternatives which will be considered at various levels of analysis.

As a minimum the following alternatives will be considered at some level:

Alternatives 1-6 (BDCP). Alternative 1 will include an option of phasing of the fish screens.
Contra Costa Water District Proposal
San Joaquin County Proposal: Isolated Old River

April 8. Moose and Ebbin prepare memo to Executive Committee on compliance with law with respect to consideration of alternatives, including recommendation of which alternatives should be considered at which levels.
April 1-20 Meetings with NGOs, contractors, 5 agencies, SWRCB, EPA, COE to discuss.
April 21. Executive Committee approves plan for consideration of alternatives.

COST AND FUNDING ALLOCATION DWR

March 24. Briefing at NRA on cost allocation and finance.

March 24. Based on current model runs, what amounts of water can be expected to be delivered to each contractor in each year type. Use existing data to develop best estimate of current construction and O&M costs of most likely alternative, and all habitat costs that are the responsibility of BDCP program. Estimate public share of costs.

April 15. Obtain written determination from USBR about their willingness to pay capital and operating costs of delivering refuge water.

April 20 Meet with Friant Kern contractors and USBR to discuss payment of capital and operating costs of pumping exchange contract water. Obtain written agreement on this issue by May 31.

April 21 Contractors meet with USBR and DWR to discuss cost allocation issue.

May 25 Complete draft cost allocation and finance plan, using contractor revenue bonds

June 1 Draft plan published on BDCP website for public comment, meeting to review with counties, NGOs, other interested parties.

June 15 Submit revenue bond costs by contractor to Treasurer for independent analysis to determine whether each contractor can market their revenue bonds.. Request complete analysis by August 1.

GOALS AND OBJECTIVES DWR

March 22? Call with DiGennaro to establish timeline, participants, etc.

GOVERNANCE (INCLUDING CONTRACTORS' ROLE IN PLAN IMPLEMENTATION) NRA

March 23 Discuss at 5 agencies meeting

March 24 Discuss at Management Committee meeting

April 1 Meeting of NGOs, Contractors, 5 agencies, counties, etc to resolve

HABITAT

April 30 Development of memoranda of understanding with each Delta County if they want one. ,

Yolo bypass: DFG/DWR

March 29 Meeting to discuss how to develop habitat plan which resolves Fazio Wildlife Refuge concerns about drainage to east. FWR, YBF, TNC, DWR, DFG, FWS, NMFS, Yolo County, others.

April 20 Presentation on solutions to drainage issue to stakeholders

San Joaquin River habitat: DWR

March 29 Meeting to discuss how to refine SJ River habitat elements, including (Ilist)

Finance see chapter 8 NRA

March 29. Meeting to refine funding needs, allocated by contractor and public: 5 agencies. Staff work done in advance.

April 13. Memo on contractor considered by 5 agencies and management team

April 31 complete meetings with interested parties on this issue

May 19. Bring recommended plan for funding to Executive Committee

O&M of publicly funded habitat lands NRA

May 18 meeting with NGO's, state and federal contractors, counties, farming organizations, biological agencies to discuss funding of O&M of publicly owned lands.

Habitat crediting agreement DWR

March 24 Ebbin review MOA; Moon to bring plan for habitat crediting to Management Committee

March 29 Meeting of NGOs, Counties, Contractors, state and federal water agencies to consider proposal

April 13. Adoption of agreement by 5 agencies.

Stone Lakes DWR

March 29. Meeting of Stone Lakes interests, DWR, contractors, Sacramento County, State Parks, others to discuss Stone Lakes issues. DWR tasked to propose resolution to issues working with FWS and State Parks.

April 28. Meeting of same group to consider points of agreement between agencies.

Creation of mitigation banks in Delta for levee districts DFG

The districts are concerned that BDCP will do so much habitat restoration and creation that there will be no more affordable opportunities for them to do the mitigation necessary under the Boatwright bill.

April 30 DWR/DFG create task force to facilitate the creation of non-BDCP mitigation banks May 30 DWR/DFG meet with Delta water and levee agencies to discuss proposed plan

June 30 Mitigation bank plan completed

PARTICIPANTS IN A DELTA FACILITY DWR**DWR to propose timeline and negotiators for these negotiations**

In the event fresh water is not available for export at the south Delta, should BDCP assume that water will moved at times Delta Facility be included for

Contra Costa Water District

EBMUD

North Bay Aqueduct

Delta water rights holders

Vallejo

East Contra Costa Water District

City of Stockton

Tentative: March and April: hold meetings with each potential participant to determine their interest. Develop a plan for each of those who are interested to accommodate their water

May: integrate the transport of water for interested participants into operation studies, determine likely charges

June Develop draft water service contract

HCP/NCCP RELATIONSHIPS WITH OTHER AGENCIES AND WATER RIGHTS HOLDERS DWR, DFG

North Bay Aqueduct

Water rights holders in Cache Slough area

By April 15: hold meetings with each potential participant to determine how to minimize conflicts between existing habitat conservation plans and assist private water rights holders to the extent feasible.

May 15: Review proposals with FWS, NMFS, DFG

June 15 Develop agreements, as appropriate

SAN JOAQUIN RIVER RESTORATION FLOWS USBR, DWR

March 21. Invitation to Jacobsma to meet with Armin to discuss SJR restoration flow options

April 30. Meet with Jacobsma to discuss options.

SOUTH DELTA WATER QUALITY DWR

Contra Costa Water District disputes the results of model runs by BDCP that indicate the ability to meet South Delta Water Quality standards.

March 22 Invite Greg Gartrell to meet with Armin in SD to review model runs

April 15 Complete above meeting. If a dispute still remains, create independent science panel to evaluate dispute.

Invite SWRCB, EPA, SJ County, SDWA, and others to participate in the process of panel selection and charge.

May 30 Meeting of independent science panel

June 15 Report of Independent Science panel.

BDCP AND AGRICULTURE NRA

March 25 Respond to request from RD 999 and other agencies to form a task force to resolve issues of interest to Delta agriculture.

OTHER ISSUES

1. Implementation schedule and other implementation issues (e.g. 18, 19 and 20 from Cylinder/Ebbin table)
2. Terrestrial issues
3. Alternatives to Take
4. Monitoring program
5. Other Stressor Measures: Need to review the "possible" additional conservation measure list and see what if any should be added to the plan, especially regarding ammonia
6. Regulatory Assurances
7. In Delta diversion screening. DWR and DFG develop a plan to fund screening of these diversions, working with Osha Meserve and other representatives of Delta agriculture.

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Sent: Wednesday, December 28, 2011 9:44 AM

To: T Birmingham (tbirmingham@westlandswater. org); Jerry Meral; Cowin, Mark; Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

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April 6 Executive Committee approves Big 6 changes for publication on website for public comment

Agreement on X2 implementation protocol. FWS

April 1. Agencies brief NGOs and Contractors technical people on environmental and water supply aspects of proposed X2 experiment.
April 7 comments from NGOs and contractors received
April 12 agencies modify X2 proposal to reflect comments
April 21 Executive Committee reviews and approves X2 proposal
April 22 X2 proposal posted on website

Agreement on any other changes/work needed on Effects Analysis in response to review of the current draft. DWR

March 24. Present plan to Management Committee of how to include Big 6 in effects analysis, including timeline. Moon, Cylinder, Gardner, Nemeth, Milligan to prepare plan. Include milestones, dates, etc.

(date) Consultants include Big 6 in effects analysis, including X2 after approval

Agreement on how and when science review will be conducted. Focus on methods and effects analysis. DWR

March 24. DWR working with other agencies and contractors prepare request to science panel and NRC to undertake joint review of these two elements. Include budget, timeline, expected results.

(date) Science panel given charge to review material

(date) meeting of science panel

(date) report of Science Panel

(date) modification of documents based on science panel report

Baseline description and modeling needs DWR

March 22: DWR and Contractors come to agreement on proposed description and modeling approach
March 25; include Moose and Ebbin in a meeting to discuss with Milligan and other federal agency reps, negotiate any changes on approach and present proposed approach
March 26 Meeting with NGOs, Delta and other water agencies to review proposed approach
April 6 Executive Committee discussion and agreement on baseline and modeling
April 7 Baseline and modeling decisions posted on website for public comment

Method issue resolution DWR

March 14 Moon work with SAIC, Ron Milligan and Russ Stein to identify list of issues we already know will need resolution by March 23, share with fish agencies and NGOs and ask for their quick list of additions by March 30;
Moon work with Milligan, Stein, Ebbin and SAIC/ICF on list of options for resolution;
April 6 present to Executive Committee for discussion;
(date) adopt agreed upon approach by this date]

Define and develop schedule for completion of refinements needed to the Effects Analysis as a result of the decisions above re Big 6 operations, baseline and methods. DWR

March 21 Moon/ Milligan/ Stein work with SAIC, ICF and Chuck Gardner, to be shared with Management Team
April 7 Presentation to NGOs, Delta and other water agencies and interests
April 21 present to Executive Committee for decision

Big 6 issues other than Fall X2, OMR, and HORB. NMFS, FWS.

March 24. Discuss at Management Committee and in subsequent conference call with all agencies
April 1 Meet with NGOs in San Francisco to discuss approaches to these issues
Follow up based on outcome of meeting with work plan and timeline.

REGULATORY COVERAGE FOR CONTRACTORS ("PERMITTEE" ISSUE). NRA

March 25. Contractors and NGOs to present rationale to Meral
March 23. Discuss at 5 agencies
March 25 receive NGO position on this issue
March 30 Meeting with FWS, NMFS, DFG and contractors to discuss
April 9 Proposed position to Brown Administration

ADAPTIVE RANGE FOR WATER OPERATIONS; ADAPTIVE MANAGEMENT PROGRAM. DWR

These two subjects will be separated in the next draft into two different issues.

March 25 Moon and Ebbin talk to Carl Wilcox, Chuck Hanson and Armin Munevar.
April 1 Conceptual options paper prepared by Ebbin
April 8 DWR and Contractors develop a proposal
April 15 5 agencies consider and revise proposal
April 20 Meeting with NGOs, Delta Interests, upstream water agencies to discuss proposal
Meetings with Contractors, 5 agencies, NGOs
May 1 Executive Committee approves final proposal

NEAR-TERM OPERATIONS. DWR.

Need to settle on how to describe and include in Effects Analysis; and what terms and conditions will be included in the permit

March 26 Cylinder and Ebbin prepare a short set of bullets on options of having a specified near-term operation
April 1 discuss options with agencies and contractors
April 5 Prepare proposal on near term operations
April 12 Meet with regulatory agencies, NGOs, Delta counties, etc. to discuss proposal
April 21 Adoption of recommended option by Executive Committee

ALTERNATIVES TO BE CONSIDERED IN THE BDCP AND THE EIR/EIS. DWR.

The task is to develop a set of alternatives which will be considered in these documents. This will include a project description, preferred alternative, and other alternatives which will be considered at various levels of analysis.

As a minimum the following alternatives will be considered at some level:

Alternatives 1-6 (BDCP). Alternative 1 will include an option of phasing of the fish screens.
Contra Costa Water District Proposal
San Joaquin County Proposal: Isolated Old River

April 8. Moose and Ebbin prepare memo to Executive Committee on compliance with law with respect to consideration of alternatives, including recommendation of which alternatives should be considered at which levels.
April 1-20 Meetings with NGOs, contractors, 5 agencies, SWRCB, EPA, COE to discuss.
April 21. Executive Committee approves plan for consideration of alternatives.

COST AND FUNDING ALLOCATION DWR

March 24. Briefing at NRA on cost allocation and finance.

March 24. Based on current model runs, what amounts of water can be expected to be delivered to each contractor in each year type. Use existing data to develop best estimate of current construction and O&M costs of most likely alternative, and all habitat costs that are the responsibility of BDCP program. Estimate public share of costs.

April 15. Obtain written determination from USBR about their willingness to pay capital and operating costs of delivering refuge water.

April 20 Meet with Friant Kern contractors and USBR to discuss payment of capital and operating costs of pumping exchange contract water. Obtain written agreement on this issue by May 31.

April 21 Contractors meet with USBR and DWR to discuss cost allocation issue.

May 25 Complete draft cost allocation and finance plan, using contractor revenue bonds

June 1 Draft plan published on BDCP website for public comment, meeting to review with counties, NGOs, other interested parties.

June 15 Submit revenue bond costs by contractor to Treasurer for independent analysis to determine whether each contractor can market their revenue bonds.. Request complete analysis by August 1.

GOALS AND OBJECTIVES DWR

March 22? Call with DiGennaro to establish timeline, participants, etc.

GOVERNANCE (INCLUDING CONTRACTORS' ROLE IN PLAN IMPLEMENTATION) NRA

March 23 Discuss at 5 agencies meeting

March 24 Discuss at Management Committee meeting

April 1 Meeting of NGOs, Contractors, 5 agencies, counties, etc to resolve

HABITAT

April 30 Development of memoranda of understanding with each Delta County if they want one. ,

Yolo bypass: DFG/DWR

March 29 Meeting to discuss how to develop habitat plan which resolves Fazio Wildlife Refuge concerns about drainage to east. FWR, YBF, TNC, DWR, DFG, FWS, NMFS, Yolo County, others.

April 20 Presentation on solutions to drainage issue to stakeholders

San Joaquin River habitat: DWR

March 29 Meeting to discuss how to refine SJ River habitat elements, including (Ilist)

Finance see chapter 8 NRA

March 29. Meeting to refine funding needs, allocated by contractor and public: 5 agencies. Staff work done in advance.

April 13. Memo on contractor considered by 5 agencies and management team

April 31 complete meetings with interested parties on this issue

May 19. Bring recommended plan for funding to Executive Committee

O&M of publicly funded habitat lands NRA

May 18 meeting with NGO's, state and federal contractors, counties, farming organizations, biological agencies to discuss funding of O&M of publicly owned lands.

Habitat crediting agreement DWR

March 24 Ebbin review MOA; Moon to bring plan for habitat crediting to Management Committee

March 29 Meeting of NGOs, Counties, Contractors, state and federal water agencies to consider proposal

April 13. Adoption of agreement by 5 agencies.

Stone Lakes DWR

March 29. Meeting of Stone Lakes interests, DWR, contractors, Sacramento County, State Parks, others to discuss Stone Lakes issues. DWR tasked to propose resolution to issues working with FWS and State Parks.

April 28. Meeting of same group to consider points of agreement between agencies.

Creation of mitigation banks in Delta for levee districts DFG

The districts are concerned that BDCP will do so much habitat restoration and creation that there will be no more affordable opportunities for them to do the mitigation necessary under the Boatwright bill.

April 30 DWR/DFG create task force to facilitate the creation of non-BDCP mitigation banks May 30 DWR/DFG meet with Delta water and levee agencies to discuss proposed plan

June 30 Mitigation bank plan completed

PARTICIPANTS IN A DELTA FACILITY DWR**DWR to propose timeline and negotiators for these negotiations**

In the event fresh water is not available for export at the south Delta, should BDCP assume that water will moved at times Delta Facility be included for

Contra Costa Water District

EBMUD

North Bay Aqueduct

Delta water rights holders

Vallejo

East Contra Costa Water District

City of Stockton

Tentative: March and April: hold meetings with each potential participant to determine their interest. Develop a plan for each of those who are interested to accommodate their water

May: integrate the transport of water for interested participants into operation studies, determine likely charges

June Develop draft water service contract

HCP/NCCP RELATIONSHIPS WITH OTHER AGENCIES AND WATER RIGHTS HOLDERS DWR, DFG

North Bay Aqueduct

Water rights holders in Cache Slough area

By April 15: hold meetings with each potential participant to determine how to minimize conflicts between existing habitat conservation plans and assist private water rights holders to the extent feasible.

May 15: Review proposals with FWS, NMFS, DFG

June 15 Develop agreements, as appropriate

SAN JOAQUIN RIVER RESTORATION FLOWS USBR, DWR

March 21. Invitation to Jacobsma to meet with Armin to discuss SJR restoration flow options

April 30. Meet with Jacobsma to discuss options.

SOUTH DELTA WATER QUALITY DWR

Contra Costa Water District disputes the results of model runs by BDCP that indicate the ability to meet South Delta Water Quality standards.

March 22 Invite Greg Gartrell to meet with Armin in SD to review model runs

April 15 Complete above meeting. If a dispute still remains, create independent science panel to evaluate dispute.

Invite SWRCB, EPA, SJ County, SDWA, and others to participate in the process of panel selection and charge.

May 30 Meeting of independent science panel

June 15 Report of Independent Science panel.

BDCP AND AGRICULTURE NRA

March 25 Respond to request from RD 999 and other agencies to form a task force to resolve issues of interest to Delta agriculture.

OTHER ISSUES

1. Implementation schedule and other implementation issues (e.g. 18, 19 and 20 from Cylinder/Ebbin table)
2. Terrestrial issues
3. Alternatives to Take
4. Monitoring program
5. Other Stressor Measures: Need to review the "possible" additional conservation measure list and see what if any should be added to the plan, especially regarding ammonia
6. Regulatory Assurances
7. In Delta diversion screening. DWR and DFG develop a plan to fund screening of these diversions, working with Osha Meserve and other representatives of Delta agriculture.

From: Jason Peltier

Sent: Wednesday, December 28, 2011 12:01 PM

To: 'Jerry Meral'; 'T Birmingham (tbirmingham@westlandswater. org)'; 'Cowin, Mark'; 'Allison Dvorak Febbo'; 'Ara Azhderian'; 'B Walthall'; 'BJ Miller'; 'Brenda Burman'; 'Byron Buck'; 'Carolyn Jensen'; 'Chris Beale'; 'Clare Foley'; 'Cliff Schulz'; 'Curtis Creel'; 'D Nelson'; 'Dan Keppen'; 'David Bernhardt'; 'Ed Manning'; frances.mizuno@sldmwa.org; 'Gayle Holman'; 'Greg Zlotnick'; 'Joe Findaro'; 'Jon Rubin'; 'Kear,Adam C'; 'Laura Simonek'; 'Lloyd Fryer'; 'Martin McIntyre'; 'Mike Henry'; 'Mike Wade'; 'Neudeck,Randall D'; 'Philp,Thomas S'; 'Rodriguez, Larry'; 'Roger Patterson'; 'Rose Schlueter'; 'Sheila Greene'; 'Steve Arakawa'; 'Sue Ramos'; 'Terry Erlewine'; 'Tom Boardman'; 'Tom Glover'; 'Tom Mongan'; 'Valerie Connor'
CC: 'King Moon, Laura'; 'Chuck Gardner'; mark.cowin@water.ca.gov; 'Karla Nemeth'
Subject: RE: Outstanding BDCP Issues

Jerry, great idea. I am sure we would like to invite Chuck and yourself to do a two hour run thru on the schedule. This would be an excellent way to get us all well-grounded for the year ahead. Not only do we need a common understanding of what the key elements and decision points of the critical path are....we need to refresh our list of outstanding issues and the associated "to do" lists. Let's do the "schedule update briefing" before the end of the second week of 2012.

And yes, you are correct that we have made some great progress on some of these items! For sure we have broad agreement that the "new" management structure and approach are yielding good results. Just think about this: we are not struggling with schedule or budget and have not for months. That says great things about the management team. Let's ponder that and raise a toast to the team you and Mark are running on New Year's eve!

One area that remains frustratingly elusive is the whole realm of public education and outreach. Better external communication is essential. We really need to step out of the trees and see the whole forest on this one.

From: Jerry Meral [mailto:jerry.meral@resources.ca.gov]

Sent: Wednesday, December 28, 2011 10:34 AM

To: Jason Peltier; T Birmingham (tbirmingham@westlandswater. org); Cowin, Mark; Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Joe Findaro; Jon Rubin; Kear,Adam C; Laura Simonek; Lloyd Fryer; Martin McIntyre; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; Valerie Connor
Cc: King Moon, Laura; Chuck Gardner; mark.cowin@water.ca.gov
Subject: RE: Outstanding BDCP Issues

I have a slightly different take on this memo, which took a lot of time to develop, and was eventually translated into Chuck Gardner's master schedule. When I look at this list of issues, I see some on which we have made remarkable progress, some which are slowly moving along, and others which are taking a lot longer than expected. It might be useful to take 2 hours and go through Chuck's schedule in a moderate level of detail with those of you who are interested, to discuss how we will complete the BDCP in a timely way given the issues we still face.

Since Jason brought this up, please let him know if you would like to do such a briefing. Then Jason, if you will let me know whether you want to proceed, I will be happy to arrange a meeting. This could be done in conjunction with a DHCCP meeting. Thanks.

Happy New Year, everyone!

Jerry

From: Jason Peltier [mailto:jpeltier@westlandswater.org]

Sent: Wednesday, December 28, 2011 8:41 AM

To: T Birmingham (tbirmingham@westlandswater. org); Jerry Meral; Cowin, Mark; Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLOYD Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: Outstanding BDCP Issues

I found this in the archives known as “the top of my desk”.

It is interesting and a bit depressing to consider what the top tier issues were on March 21, 2011.

From: Jason Peltier

Sent: Friday, January 13, 2012 11:44 AM

To: T Birmingham (tbirmingham@westlandswater.org); Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: of course, there is a lot of good information in the report....

They just don't like their myths about salinity and economic impacts in the Delta addressed honestly.

<http://www.indybay.org/newsitems/2012/01/12/18704629.php>

Delta advocates blast flaws in tainted PPIC report

by Dan Bacher

Thursday Jan 12th, 2012 10:30 AM

Restore the Delta policy analyst Jane Wagner-Tyack explained, "The report is so out of touch with reality that it actually places the new Stockton water supply project under water because the authors have decided that the way to fix the Delta is to permanently flood it. By depriving Stockton of a water supply, it seems that someone has made a decision to relocate the Delta's largest urban population of 300,000 residents somewhere else."



bechtel_logo.png

Delta advocates blast flaws in tainted PPIC report

by Dan Bacher

Restore the Delta is challenging the accuracy and value of the Public Policy Institute's controversial "report" on the Delta, "Transitions for the Delta Economy," funded by the Stephen Bechtel Foundation, Resources Legacy Fund and

David and Lucile Packard Foundation.

In the report's summary, the Public Policy Institute (PPIC) proclaimed, "Enormous changes—from natural forces to management decisions—are coming to California's fragile Delta region and will have broad effects on its residents. This report finds that in the first half of this century, the Delta as a whole is likely to experience a loss of 1 percent of economic activity as a result of these changes. It also identifies planning priorities for managing the Delta's future."

The full report is available at http://www.ppic.org/content/pubs/report/R_112EHR.pdf

After reviewing the report, Barbara Barrigan-Parrilla, executive director of Restore the Delta (<http://restorethedelta.org>), commented, "It is disheartening that the report fails to fully and properly analyze Delta water quality, current project proposals, and the real Delta economy."

Barrigan-Parrilla emphasized that the PPIC report assumes that the new "dual conveyance" system, more commonly known to Californians as the peripheral canal/tunnel, will only divert 4.9 million acre feet of Delta water, despite the reality that water contractors will have difficulty justifying the sale of billions of dollars in new revenue bonds to finance the project if they are going to receive a significant smaller share of Delta water.

Conner Everts with the Southern California Watershed Alliance noted, "Southern California rate payers cannot afford to pay more and more to Metropolitan Water District for an unsustainable water supply. Regional self sufficiency, which can be achieved through conservation, storm water and reuse projects, is a much more affordable way to make more water for Southern California water users."

Restore the Delta policy analyst Jane Wagner-Tyack quipped, "The report is so out of touch with reality that it actually places the new Stockton water supply project under water because the authors have decided that the way to fix the Delta is to permanently flood it. By depriving Stockton of a water supply, it seems that someone has made a decision to relocate the Delta's largest urban population of 300,000 residents somewhere else."

Barrigan-Parrilla said that despite multiple attempts by Delta water agency representatives, Delta engineers, levee experts trained at other renowned universities, economists, and Delta advocates, the authors of the PPIC reports on the Delta have rebuffed attempts to incorporate local input into their research. The report's writers are Josué Medellín-Azuara, Ellen Hanak, Richard Howitt, and Jay Lund, with research support from Molly Ferrell, Katherine Kramer, Michelle Lent, Davin Reed, and Elizabeth Stryjewski.

"The PPIC models regarding salinity changes in the Delta and how such changes would alter our economy are flawed," Barrigan-Parrilla concluded. "If people in California want to know the real value of the Delta economy presently and how exporting water could destroy it, they should read the Economic Sustainability Plan recently published by the Delta Protection Commission – a rigorously reviewed document produced by experts who know the Delta best."

PPIC tries to hide funding by Bechtel, Packard and Resources Legacy

Barrigan-Parrilla noted that while the cover states the report was funded by The Watershed Science Center at UC Davis, page 62 of the report explains that the study was paid for by the Delta Solutions program funders, that once again includes the Stephen Bechtel Foundation, Resources Legacy Fund and the David and Lucile Packard Foundation.

"So it seems this time rather than checks going directly to PPIC from these pro peripheral canal foundations, checks floated through the University and then to UC Davis," said Barrigan-Parrilla. "Restore the Delta believes this is a worsening scenario because the average person will simply believe that the study was financed by an unbiased educational institution without a hidden agenda. And if there is nothing to hide, then why aren't the funders on the cover?"

According to the Bechtel Foundation's website (<http://www.sdbjrfoundation.org>), "Stephen D. Bechtel, Jr. created the S. D. Bechtel, Jr. Foundation in 1957 to improve the quality of life for Californians by addressing selected issues that challenge the health and prosperity of the state. In addition to his leadership of the S. D. Bechtel, Jr. Foundation and the Stephen Bechtel Fund, Mr. Bechtel is Chairman Retired and a Director of Bechtel Group, Inc."

The Brown and Obama administrations are currently fast-tracking Arnold Schwarzenegger's Bay Delta Conservation Plan (BDGP) to build a peripheral canal in order to export more Delta water to southern California and corporate agribusiness on the west side of the San Joaquin Valley. Delta advocates believe the construction of peripheral canal or tunnel would result in the extinction of Central Valley steelhead, Sacramento River chinook salmon, Delta smelt,

longfin smelt, green sturgeon and other imperiled fish species.

Do PPIC's authors live in a parallel universe?

The PPIC report's assumption that the new peripheral canal/tunnel will only divert 4.9 million acre feet of Delta water is mind boggling, considering that exports from the Delta have reached record levels well over 4.9 million acre feet annually over the past 10 years. The Brown and Obama administrations exported a record amount of water from the Delta in 2011.

The annual export total, including water diverted by the Contra Costa Canal and North Bay Aqueduct, was 6,633,000 acre-feet in 2011 – 163,000 acre-feet more than the previous record of 6,470,000 acre-feet set in 2005, according to DWR data. The annual export total, excluding water diverted by the Contra Costa Canal and North Bay Aqueduct, was 6,520,000 acre-feet in 2011 - 217,000 acre-feet more than the previous record of 6,303,000 acre-feet set in 2005.

Are we to believe that the state water contractors are going to agree to the building of an enormously expensive peripheral canal that would actually divert less water from the Delta than the record levels that were delivered to southern California and San Joaquin Valley agribusiness in 2011? The PPIC report authors apparently live in a parallel universe devoid of science, logic and facts.

The record pumping from the Delta in 2011 - used to fill billionaire Stewart Resnick's Kern Water Bank and southern California reservoirs - resulted in a huge, unprecedented fish kill at the Delta pumps. Agency staff "salvaged" a total of 11,158,025 fish in the Delta water pumping facilities between January 1 and September 7, 2011 alone. Scientists estimate that the actual amount of fish lost in the pumps is 5 to 10 times the "salvage" numbers.

A horrific 8,985,009 Sacramento splittail, the largest number ever recorded, were "salvaged" during this period. The previous record salvage number for the splittail, a native minnow found only in the Sacramento-San Joaquin River system, was 5.5 million in 2006.

There is no doubt that the Brown administration has eclipsed the Schwarzenegger administration's abysmal environmental legacy by exporting a record amount of water from the Delta and killing record numbers of fish in the Delta pumps in 2011.

The MLPA/peripheral canal connection

Meanwhile, Governor Jerry Brown and Natural Resources Secretary John Laird are not only continuing Schwarzenegger's mad drive to build a peripheral canal, but they have forged ahead with Schwarzenegger's privately funded Marine Life Protection Act" (MLPA) Initiative. The initiative is a corrupt process, overseen by a big oil lobbyist, marina developer, coastal real estate executive, agribusiness hack and other corporate operatives with many conflicts of interest, that creates so-called "marine protected areas" on the California coast.

And guess who is funding the MLPA fiasco? The Resources Legacy Fund and the David and Lucile Packard Foundation, two of the three funders of the recent PPIC report promoting the construction of the peripheral canal, are also funding the MLPA Initiative! The initiative creates "marine protected areas" that fail to protect the ocean from oil spills and drilling, pollution, military testing, corporate aquaculture, wave and wind energy projects and all other human impacts on the ocean than fishing and gathering.

In one of the most overt conflicts of interest in California history, Catherine Reheis-Boyd, the president of the Western States Petroleum Association, chaired the "august body" that designed the "marine protected areas" that went into effect on the Southern California Coast on January 1. Reheis-Boyd, a big oil industry lobbyist advocating for new offshore drilling off the California coast, the Keystone XL pipeline and the gutting of environmental laws, chaired the MLPA Blue Ribbon Task Force for the South Coast, as well as "serving" on the North Central Coast and North Coast Task Forces.

The Packard Foundation and four other "non-profits" donated a total of \$20 million to fund the MLPA Initiative. The Resources Legacy Fund Foundation, a shadowy organization that North Coast environmental leader John Lewallen describes as a "money laundering operation" for corporate money, received the funds from these foundations to implement the unpopular MLPA process.

The David and Lucile Packard Foundation contributed \$8.2 million to fund the MLPA process. Julie E. Packard, the executive director and founder of the Monterey Bay Aquarium, serves as Vice Chairman of the Board of Trustees of

the foundation.

The Laguna Beach-based Marisla Foundation, founded by Getty Oil heiress Anne Getty Earhart, gave \$3 million over several years. The Gordon and Betty Moore Foundation donated \$7.4 million, the Keith Campbell Foundation contributed \$1.2 million and the Annenberg Foundation contributed \$200,000.

All of this money was dumped into the Resources Legacy Foundation to kick recreational anglers, commercial fishermen and seaweed gatherers, the most vocal advocates of fishery restoration and true environmental protection and the most fervent opponents of the peripheral canal, off the water in a disgusting case of corporate greenwashing. (<http://blogs.alternet.org/danbacher/2011/02/18/the-corporate-money-behind-the-mlpa-initiative>)

From: Jason Peltier

Sent: Monday, January 16, 2012 11:38 AM

To: T Birmingham (tbirmingham@westlandswater. org); Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: some good.

You may have missed this from last December... look at the DFG answers to question #3 below. I would say that represents progress! Consider that they wouldn't have responded like that even three years ago.

California Department of Fish and Game Responses to: Questions from the Delta ISB for the December 1, 2011 meeting

Below are questions the Delta ISB would like each organization to address in brief opening remarks (5-10 minutes each), followed by a more detailed open discussion. The questions are intentionally broad, so the Delta ISB does not expect answers to all of them during the meeting. Instead, the Delta ISB would appreciate hearing about examples (successful or not) and what lessons were learned. Please feel free to focus on the questions most directly applicable to the organization and constituents you represent. If time doesn't allow you to answer fully, please submit written comments (address below).

1. In what ways do you feel Delta science is a) meeting the challenges of water and environmental management in the Delta, and/or b) not meeting these challenges? The Department believes that science is meeting the challenges of management in the Delta within the constraints of being able to identify appropriate research questions, develop appropriate study designs and implement the studies once designed within the constraints of available funding and contracting requirements. The Department has been particularly pleased with the work associated with the POD studies and the more intensive analysis of historical information. There is the need for ongoing synthesis of science conducted to date, making the results available to decision makers and the public.

Implementing investigations to answer specific questions in a timely manner is always a challenge. The recent efforts to develop and implement the fall low salinity zone investigations is a good example of identifying topics for investigation, vetting them with interested stakeholders and the scientific community, and implementing them in conjunction with ongoing field work conducted through the Interagency Ecological Program.

2. What factors have led to science being effective in addressing today's critical issues, and what factors have led to it being ineffective?

- *Long term data sets for many of the species of concern and the environmental factors affecting them.*
- *The availability of funding through agencies, the Delta Science Program, and the Ecosystem Restoration Program to solicit study proposals to address specific research targeted at addressing uncertainties identified in conceptual models for the Delta ecosystem.*
- *Ongoing efforts through the Interagency Ecological Program to coordinate scientific investigations within the Delta to minimize redundancy and capitalize on synergy between studies and investigators.*

3. What are the emerging critical issues in the Delta that science will need to have addressed a decade from now?

- *The role and effectiveness of habitat restoration (riparian, flood plain, and intertidal) on Delta and tributary ecosystems and processes.*
- *The role of nutrients in the health of the Delta ecosystem.*

- *How to manage for a Delta ecosystem with quagga/zebra mussels.*
- *How to manage a Delta with many flooded islands for the benefit of the Delta ecosystem and a sustainable Delta economy.*

4. What should we be doing now and over the next few years to ensure these scientific issues are addressed?

- *Use the existing infra-structure of the DSP, IEP, and Delta ISB to coordinate, synthesize, and target research to address our existing gaps in knowledge about the Delta and the species that depend upon it and identify emerging science needs.*
- *Develop a data base of ongoing monitoring and research on the Delta and its tributaries that is accessible to the scientific community, stakeholders and the public.*
- *Continue to use panels of independent scientists to advise the agencies making decisions affecting the Delta.*
- *Integrate the monitoring, research and synthesis processes of the Delta Plan with those of the Interagency Ecological Program, Bay Delta Conservation Plan, CVPIA, ERP, the San Joaquin River Restoration Program, and Central Valley Flood Protection Program.*

5. To what extent is poor or incomplete communication of science an issue in the Delta? How can and how should the communication of science be improved?

Communication of science in a highly charged environment like the Delta is ongoing issue. The current environment of competing views of what stressors/drivers and to what extent any one stressor/driver affecting the health of the Delta obscures the fact that the Delta is a highly altered and complex ecosystem with many interacting factors.

- *A better process is needed to put the role of various stressors and drivers in context, this could be accomplished by convening independent panels to review current information on specific stressor/drivers and their relationship to other factors.*
- *The further development of existing conceptual models and making them more understandable to the public and decision makers is needed.*
- *Developing the California Estuarine Monitoring site for the California Water Quality Monitoring Council Web Portal would be an important tool in making information on ongoing monitoring and research available to the public. This is currently being coordinated by the IEP in cooperation with the SFWCA and TBI.*
- *Maintaining the current online Journal with the inclusion of articles summarizing the current state of knowledge on specific topics. Alternatively wider distribution of the IEP Newsletter or Estuaries, Outdoor California could be used to present information.*

6. Should separate and distinct roles be assigned to different sectors of the science community in the Delta (e.g., state agency scientists, academic scientists, NGO scientists, federal agency scientists, consulting firm scientists, water contractors, and municipal utility districts)? If so, what are these separate and distinct roles?

No, a higher degree of integration and coordination is needed, the IEP process should be expanded for coordination and processes developed to engage consulting firm scientists, water contractors, and municipal utility districts more fully in that process. IEP will need additional support to perform activities outside of their current work plan and budget.

California Department of Fish and Game Responses to: Questions from the Delta ISB for the December 1, 2011 meeting

Below are questions the Delta ISB would like each organization to address in brief opening remarks (5-10 minutes each), followed by a more detailed open discussion. The questions are intentionally broad, so the Delta ISB does not expect answers to all of them during the meeting. Instead, the Delta ISB would appreciate hearing about examples (successful or not) and what lessons were learned. Please feel free to focus on the questions most directly applicable to the organization and constituents you represent. If time doesn't allow you to answer fully, please submit written comments (address below).

1. In what ways do you feel Delta science is a) meeting the challenges of water and environmental management in the Delta, and/or b) not meeting these challenges? The Department believes that science is meeting the challenges of management in the Delta within the constraints of being able to identify appropriate research questions, develop appropriate study designs and implement the studies once designed within the constraints of available funding and contracting requirements. The Department has been particularly pleased with the work associated with the POD studies and the more intensive analysis of historical information. There is the need for ongoing synthesis of science conducted to date, making the results available to decision makers and the public.

Implementing investigations to answer specific questions in a timely manner is always a challenge. The recent efforts to develop and implement the fall low salinity zone investigations is a good example of identifying topics for investigation, vetting them with interested stakeholders and the scientific community, and implementing them in conjunction with ongoing field work conducted through the Interagency Ecological Program.

2. What factors have led to science being effective in addressing today's critical issues, and what factors have led to it being ineffective?

- *Long term data sets for many of the species of concern and the environmental factors affecting them.*
- *The availability of funding through agencies, the Delta Science Program, and the Ecosystem Restoration Program to solicit study proposals to address specific research targeted at addressing uncertainties identified in conceptual models for the Delta ecosystem.*
- *Ongoing efforts through the Interagency Ecological Program to coordinate scientific investigations within the Delta to minimize redundancy and capitalize on synergy between studies and investigators.*

3. What are the emerging critical issues in the Delta that science will need to have addressed a decade from now?

- *The role and effectiveness of habitat restoration (riparian, flood plain, and intertidal) on Delta and tributary ecosystems and processes.*
- *The role of nutrients in the health of the Delta ecosystem.*

From: Jason Peltier

Sent: Saturday, January 21, 2012 7:26 AM

To: Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLOYD Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: Now add turtle to the BO soup

Leatherback turtle sanctuary set up on West Coast

Peter Fimrite, Chronicle Staff Writer

San Francisco Chronicle January 21, 2012 04:00 AM Copyright San Francisco Chronicle. All rights reserved. This material may not be published, broadcast, rewritten or redistributed.

Saturday, January 21, 2012

Federal regulators designated nearly 42,000 square miles of ocean along the West Coast as critical habitat for the Pacific leatherback turtle Friday, far less than originally proposed but still the largest protected area ever established in American waters.

The protected area is the first permanent safe haven in the waters of the continental United States for endangered leatherbacks, which swim 6,000 miles every year to eat jellyfish outside the Golden Gate.

The designation, by the National Oceanographic and Atmospheric Administration, was a bittersweet victory for environmentalists, who have been fighting to protect the marine reptiles from extinction.

The 41,914 square miles that the NOAA's National Marine Fisheries Service protected along the coasts of California, Oregon and Washington did not include the migration routes the turtles take to get to the feeding grounds. That means 28,686 square miles of habitat originally proposed for the designation was left unprotected.

"It's a big step in the right direction, but we want protections for migratory pathways," said Ben Enticknap, the Pacific project manager for Oceana, an international nonprofit dedicated to protecting the world's oceans. "I guess we've got a lot more work to do to get there."

How protection works

The regulations will restrict projects that harm the turtles or the gelatinous delicacies they devour. The government will be required to review and, if necessary, regulate agricultural waste, pollution, oil spills, power plants, oil drilling, storm-water runoff and liquid natural gas projects along the California coast between Santa Barbara and Mendocino counties and off the Oregon and Washington coasts.

Aquaculture, tidal, wave turbine, desalination projects and nuclear power plants will have to consider impacts on jellyfish and sea turtles. For instance, the repermitting of the Diablo Canyon Nuclear Power Plant, in San Luis Obispo, will probably come under scrutiny.

The regulations are a response to a lawsuit filed in U.S. District Court in San Francisco in 2009 by the nonprofit environmental groups Turtle Island Restoration Network, the Center for Biological Diversity and Oceana. The groups had been trying since 2007 to establish critical habitat for leatherbacks under the Endangered Species Act. They accused the government of failing to protect the reptiles from gill-net and longline fishing, oil drilling and a variety of other activities, including wave-energy projects.

California habitat

The new ruling covers 16,910 square miles along California's coast from Point Arena (Mendocino County) to Point Arguello (Santa Barbara County) to a depth of 9,000 feet. The remaining turtle habitat stretches from Cape Flattery, Wash., to Cape Blanco, Ore. seaward to a depth of a little more than 6,500 feet.

The only other critical habitat established for leatherbacks in U.S. waters is in a small area along the western end of St. Croix, in the Virgin Islands. There is also some critical habitat in Puerto Rico for green sea turtles and hawksbill sea turtles, but nothing as large as the new designation.

Turtle advocates are worried that the decision to leave out migratory routes will leave the giant sea creatures vulnerable to long lines and drift nets dragged by oceangoing vessels, which often mistakenly hook and entangle marine mammals and turtles.

Both longline and gill-net fishing are banned along the West Coast during leatherback migration, but Teri Shore, the program director for the Turtle Island Restoration Network, said the fisheries service is considering plans to expand gill-net fishing for swordfish.

More threats

"Threats to these turtles are increasing, not diminishing," said Shore, whose organization also goes by its Web name, SeaTurtles.org. "We don't want to see the leatherback turtles go the way of the grizzly bear and disappear."

Leatherbacks, known scientifically as *Dermochelys coriacea*, are the largest sea turtles in the world, sometimes measuring 9 feet long and weighing as much as three refrigerators, or more than 1,200 pounds. Their life span is not fully known, but biologists believe they live at least 40 years and possibly as long as 100 years.

The worldwide population has declined by 95 percent since the 1980s because of commercial fishing, egg poaching, destruction of nesting habitat, degradation of foraging habitat and changing ocean conditions. Listed as endangered since 1970 under the Endangered Species Act, there are believed to be only 2,000 to 5,700 nesting females left in the world.

Pacific leatherbacks leave their nesting grounds in Indonesia, the Solomon Islands, Vanuatu and Papua New Guinea and swim across the Pacific Ocean to forage along the West Coast in the summer and fall. It is the longest known migration of any marine reptile.

Golden Gate jellyfish

They are often seen feeding on jellyfish in the shipping lanes outside the Golden Gate, in [Monterey](#) Bay and Bodega Bay. Assemblyman Paul Fong, D-Cupertino, said Friday that he will introduce legislation designating the leatherback as California's official marine reptile in an attempt to call attention to its plight.

The newly protected zones will extend 200 miles out to sea, but they won't protect the slow-moving creatures from floating plastic bags, which look like jellyfish. A recent study found plastic in the intestinal tracts of 37 percent of 370 leatherbacks that had been found dead.

Read more: <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2012/01/20/MN5C1MR57A.DTL#ixzz1k6R8iPoe>

From: Tom Birmingham
Sent: Thursday, January 26, 2012 11:22 AM
To: 'Weaver, Kiel'
CC: joe.findaro@akerman.com; 'Bernhardt, David L.'; 'Nelson, Damon'
Subject: RE: Section 108 and Title IV

The only meetings currently set are a meeting with Mike Connor on January 31, from 10:30 – 1:30 and a meeting with Senator Feinstein on February 1 from 10:00 – 11:00.

From: Weaver, Kiel [<mailto:Kiel.Weaver@mail.house.gov>]
Sent: Thursday, January 26, 2012 10:18 AM
To: 'Tom Birmingham'
Cc: Nelson, Damon; 'Stuart Somach'
Subject: RE: Section 108 and Title IV

You may regret that offer.

From: Tom Birmingham [<mailto:tbirmingham@westlandswater.org>]
Sent: Thursday, January 26, 2012 1:18 PM
To: Weaver, Kiel
Cc: Nelson, Damon; 'Stuart Somach'
Subject: RE: Section 108 and Title IV

Thank you for the heads-up. Please let me know if there is anything I can do to help. I will be in DC next Tuesday, Wednesday, and Thursday morning. If you would like me to meet with members or staff to explain what we are attempting to do, I would be happy to attend any meeting.

From: Weaver, Kiel [<mailto:Kiel.Weaver@mail.house.gov>]
Sent: Thursday, January 26, 2012 10:02 AM
To: 'Stuart Somach'; Tom Birmingham
Cc: Nelson, Damon
Subject: FW: Section 108 and Title IV

FYI....I'm sure you will get calls soon about this.

From: Weaver, Kiel
Sent: Thursday, January 26, 2012 1:01 PM
To: Glenn, Kristen; Harley, Derek; Lombardi, Kyle; Wiseman, Sandra; Hanretty, Ryan
Cc: Nelson, Damon
Subject: Section 108 and Title IV

All,

Per the Member meeting yesterday, Chairman Hastings mentioned that we are waiting for language back from Leg Counsel. Leg Counsel continues to work on the language, specifically editing the CVPIA parts of Title 1 and San Joaquin River Restoration part of Title II. In my view, most of those titles were not the source of contention in our discussion.

However, Section 108 and Title IV were the sources of lengthy discussion. These provisions, in my view, are the most important in many ways. As such, and given Subcommittee Chairman McClintock's rightful request to vet this language one more time with your respective constituents, I send both provisions to you in Word format.

I ask that you not send this email out in shotgun fashion. Rather, send it out to the respective people you have talked with in the past to ensure that this concept is what they signed off on before or to ensure that they are comfortable

given the small changes. You will notice the addition of some small changes in Title IV to avoid sequential referral to other House Committees, a new Section 403 (TCCA/Westlands language), and a small change in Section 404. Otherwise, this should not be new to you or your people.

Given the time constraints discussed at yesterday's meeting, I ask that you get back to the group by noon DC time tomorrow. Chairman Hastings made it clear that he wants to move this bill.

From: Jason Peltier

Sent: Friday, January 27, 2012 3:49 PM

To: T Birmingham (tbirmingham@westlandswater.org); Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: SWRCB Delta Flow Report Implications

Attachments: W&P summary for PCWA 1_19_12.pptx

From: Jason Peltier [mailto:jpeltier@westlandswater.org]

Sent: Friday, January 27, 2012 2:24 PM

To: Bill Darsie; Daniel Wilson (Daniel@kaydix.com)

Subject: SWRCB Delta Flow Report Implications

Here is a PowerPoint summary of the analysis of the SWRCB delta flow objectives. Good stuff starts page 11. Page 14 shows DEAD POOL about 50% of the time.

This is crazy with a lot of damage to a lot of people [to say nothing of the fish]. And there are many in the enviro and fishing community who think it should be implemented AT ONCE.

They are ignorant of the consequences of what they advocate, which happens most of the time, but in this case it is stunning.

Water and Power Assessment of the SWRCB Delta Flow Criteria

Presentation to the Placer County Water Agency

January 19, 2012

By Jerry Johns

Overview

- Introductions
- How did we get here
 - Reason for the evaluation
 - Who is involved and Consultants
 - Tasks under the Contract
- Results
 - Tools, Criteria evaluated, results so far
- Concerns with the use of Unimpaired Flow
- Next Steps
 - Insights into the process
 - Outreach, studies, recommended approach

How Did We Get Here

- 2009 Delta Reform Act (SBX7-1) – Water Bond Bill
 - Set up the Delta Stewardship Council
 - WC 85086 – Directive to SWRCB to set Delta Flow Crit.
- SWRCB Delta Flow Criteria – August 2010
 - Not regulatory – not balanced
 - Impacts not really evaluated in detail
 - Better tools needed
- Concerns with the application of the Delta Flow Criteria (DFC) in the into basin-wide water rights and effects on water and power production

Parties Involved

- State and Federal Contractors Water Agency
- San Joaquin River Group
- Western Area Power Authority
- Pacific Gas and Electric Company
- Sacramento Municipal Utility District
- Redding Electric Utility
- Association of California Water Agencies
- Placer County Water Agency

- Northern California Power Agency
- California Municipal Utilities Association
- Yuba County Water Agency

Contract for Joint Studies

- Consultant Team
 - HDR, MBK, Ecorp
- Contract Tasks
 - Task 1 : Initial CVP/SWP and Tuolumne/Merced Hydropower Assessment
 - Task 2: Assessing Impacts to Areas Upstream of the Valley Rim Reservoirs
 - Task 3: Model Refinements and Environmental Impact Analysis

Results to date

- Tools
 - CALSIM II - By Walter Bourez - MBK
 - SJRGA Assessment on SJR - Dan Steiner - SJRGA
 - post-processed in two spreadsheet models, Long-Term Gen for the CVP and SWP Gen for the State Water Project – By Buzz Link – HDR
- Base used - D1641 and 2008 and 2009 BOs
 - Including fall X2

Delta Flow Criteria

- Evaluated only 4 – Huge Impacts
 - Delta Outflow – 75% of Unimpaired – Jan - Jun
 - San Joaquin at Vernalis – 60% UnImp. – Feb - Jun
 - Sacramento at Rio Vista – 75% Unimp. – Nov – Jun
 - Problems with Internal Delta Flows – DCC & Georgia S
 - Moved to Hood + Yolo Bypass – saved about 1 MAF
 - OMR – Greater than 1,500 cfs in Dry and Crit Yrs

Delta Flow Criteria

- Not Evaluated – difficult to model
 - Wilkins Slough – 20,000 cfs in storm events
 - Starting in Nov and lasting until Salmon smolts have moved downstream
 - Rough estimated avg. cost of 150 TAF/yr for 7 days in November
 - Positive Flows at Georg. S when Salmon Present
 - Freeport – 13,000 to 17,000 cfs
 - Rough estimated avg. cost of: Nov-235, Apr-140, May-200 TAF
 - Vernalis pulse flow – 3,600 cfs late Oct for 10 days
 - SJR Vernalis/ Export Ratio – greater than 3 to 1
 - Oct 15 to 26
 - Other OMR and Jersey Point Flows in Category B

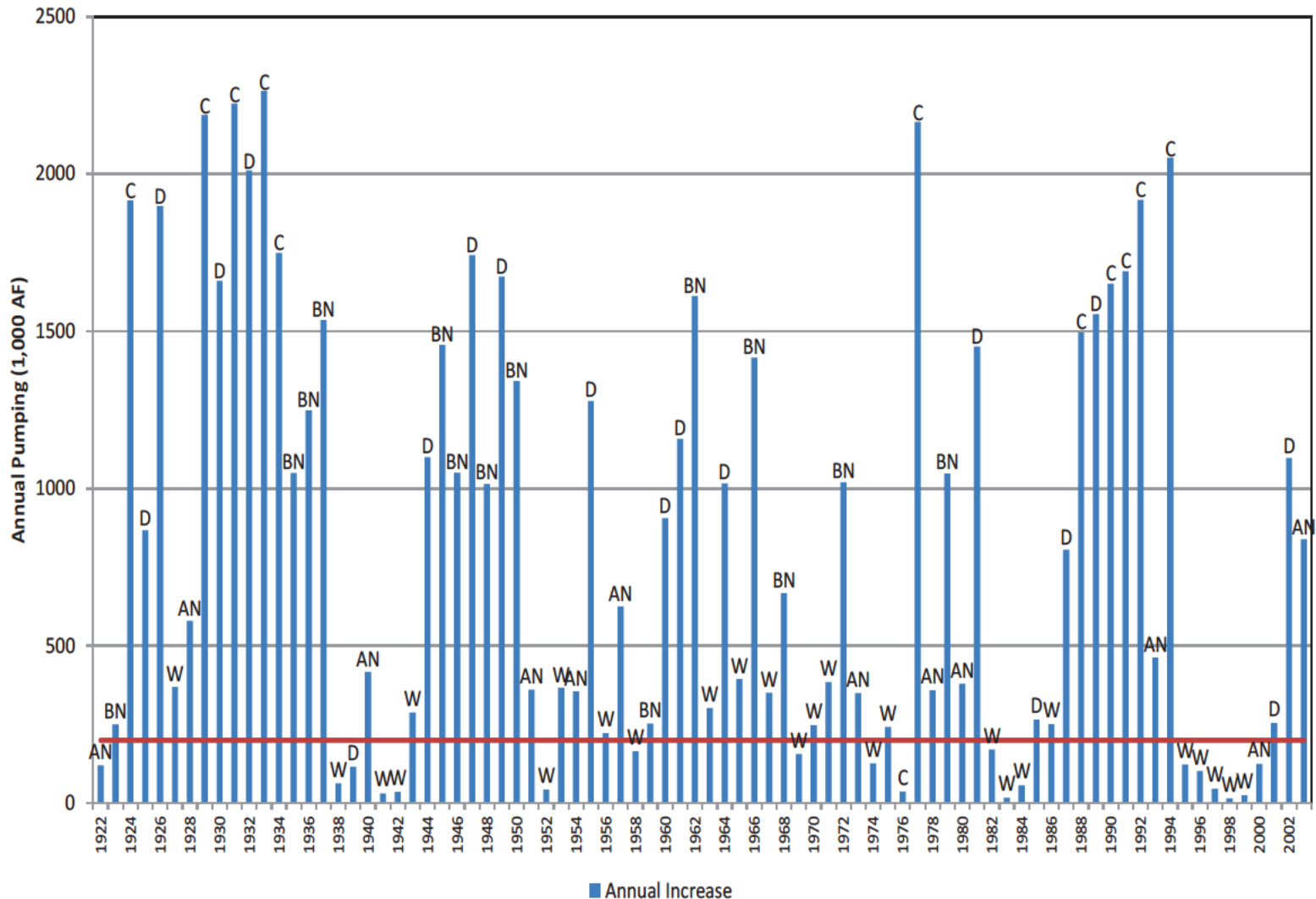
Results - Observations

- Impacts go beyond what models were designed for
 - Unsustainable Groundwater pumping would really lead to large amounts of fallowing
 - Infrequent Ag delivery due to “broken” reservoirs would lead to large scale fallowing
 - Impacts to Trinity – 170 TAF of increased imports
- Depletion analysis needs to be rerun
 - A few months in summer loss of water = crop loss entire season
 - May need to assume no Ag acreage, but reservoirs may still be “broken”
- Energy impacts actually greater than shown
 - Effects on ancillary services
 - System-wide grid impacts due to loss of buffering by SWP and CVP

Annual Change in Groundwater Pumping in Sacramento Valley

SWRCB DFC minus Existing (BO's)

- Increased groundwater pumping produced by CalSim model is not physically possible
- Annual limit of increased groundwater pumping is 200,000 AF indicated by the red line on the chart below, this is the amount used in the hydropower analysis

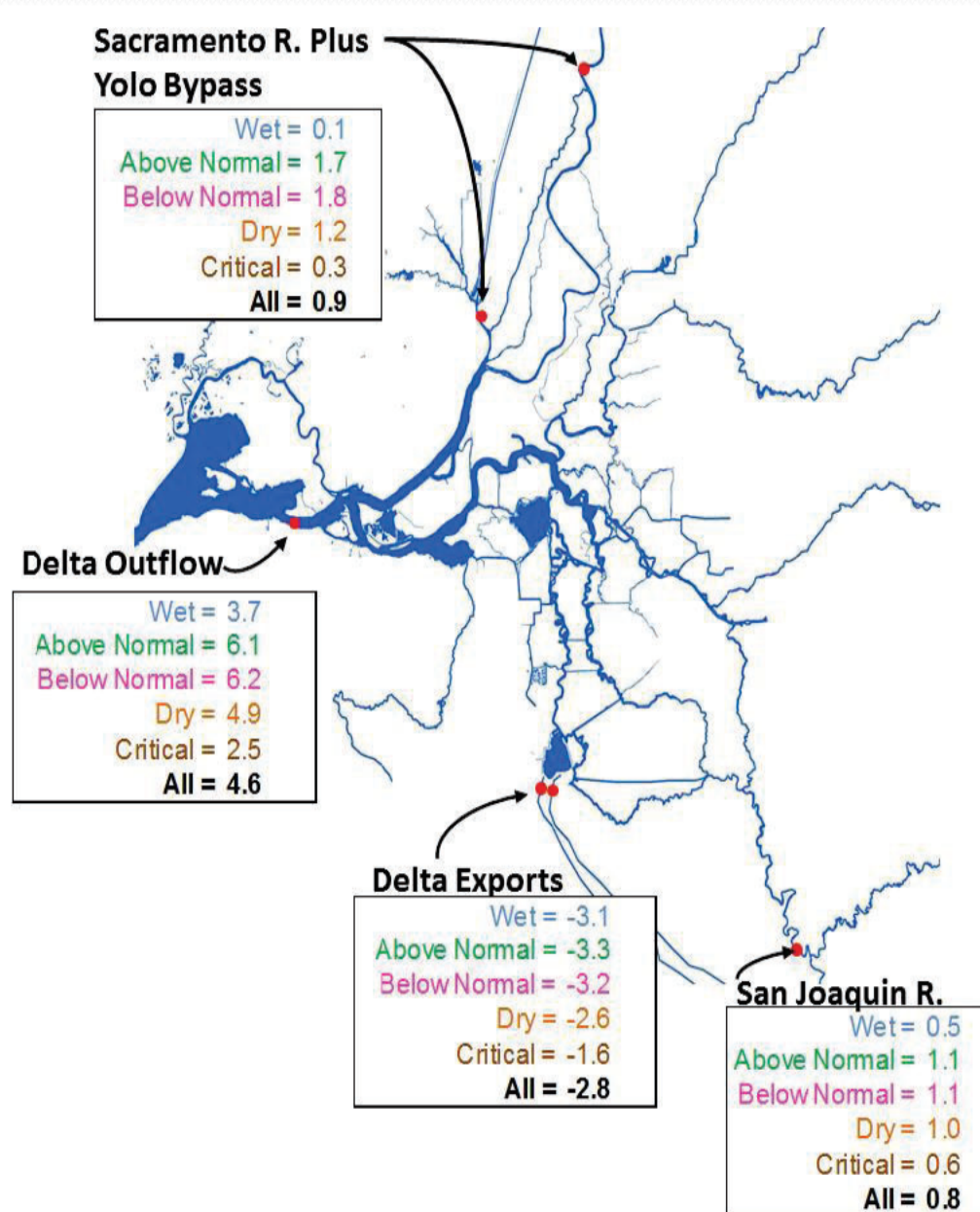


Results - Flows and Storage

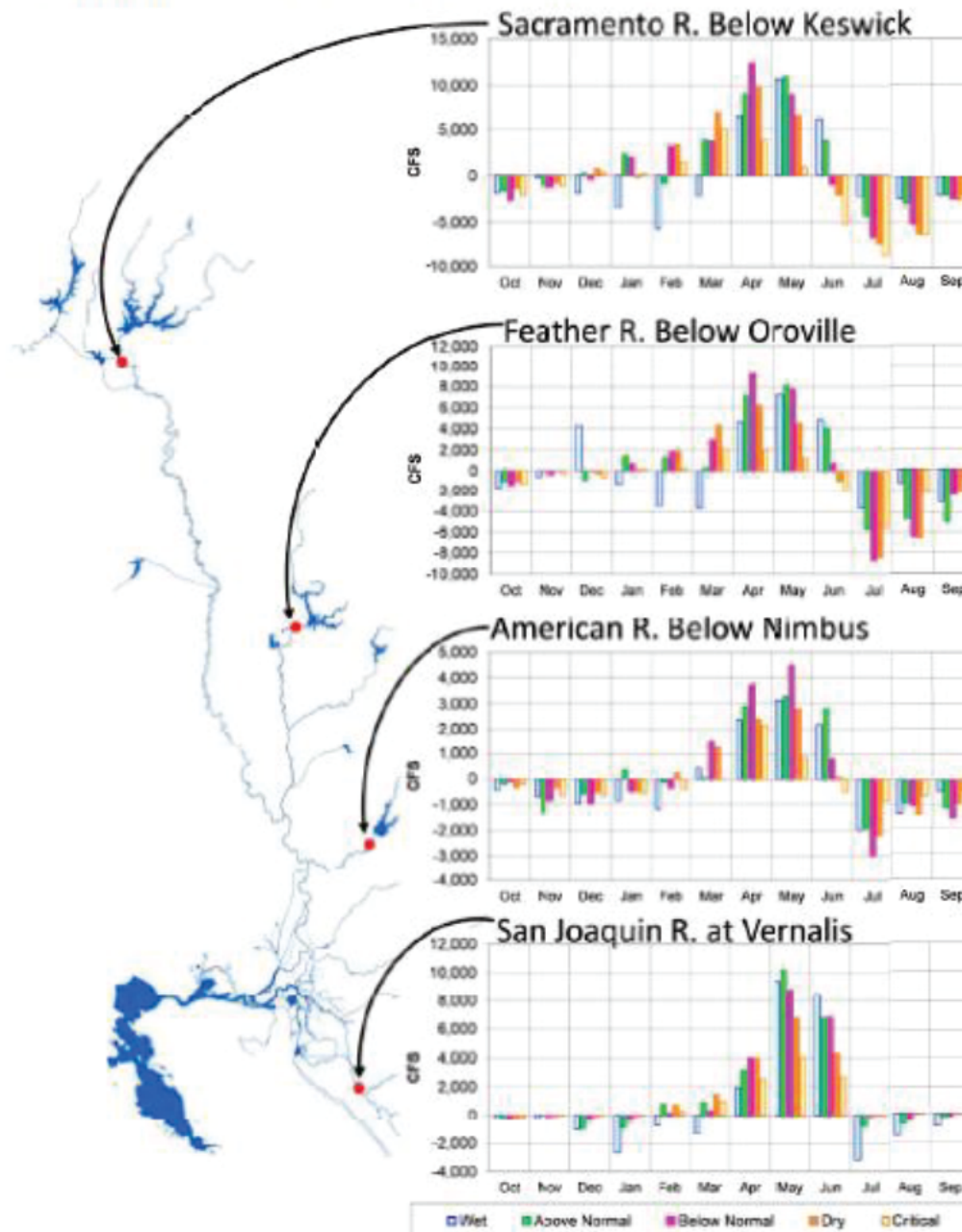
- Delta Outflow increase by about 4.6 MAF
 - Senior Water Rights holders, including pre-1914, Sacramento Settlement, and Exchange contractors, are cut regularly and significantly
 - NOD Ag. - about 700,000 acres out of production
- Delta Exports reduced by Average of 2.8 MAF
 - No stored water used to support exports
 - M&I – 1.1 MAF - About 2.5 Million Households
 - SOD Ag. – about 1 Million + Acres out of production

Summary of Changes in Delta Boundary Flows - SWRCB DFC minus Existing (BO's)

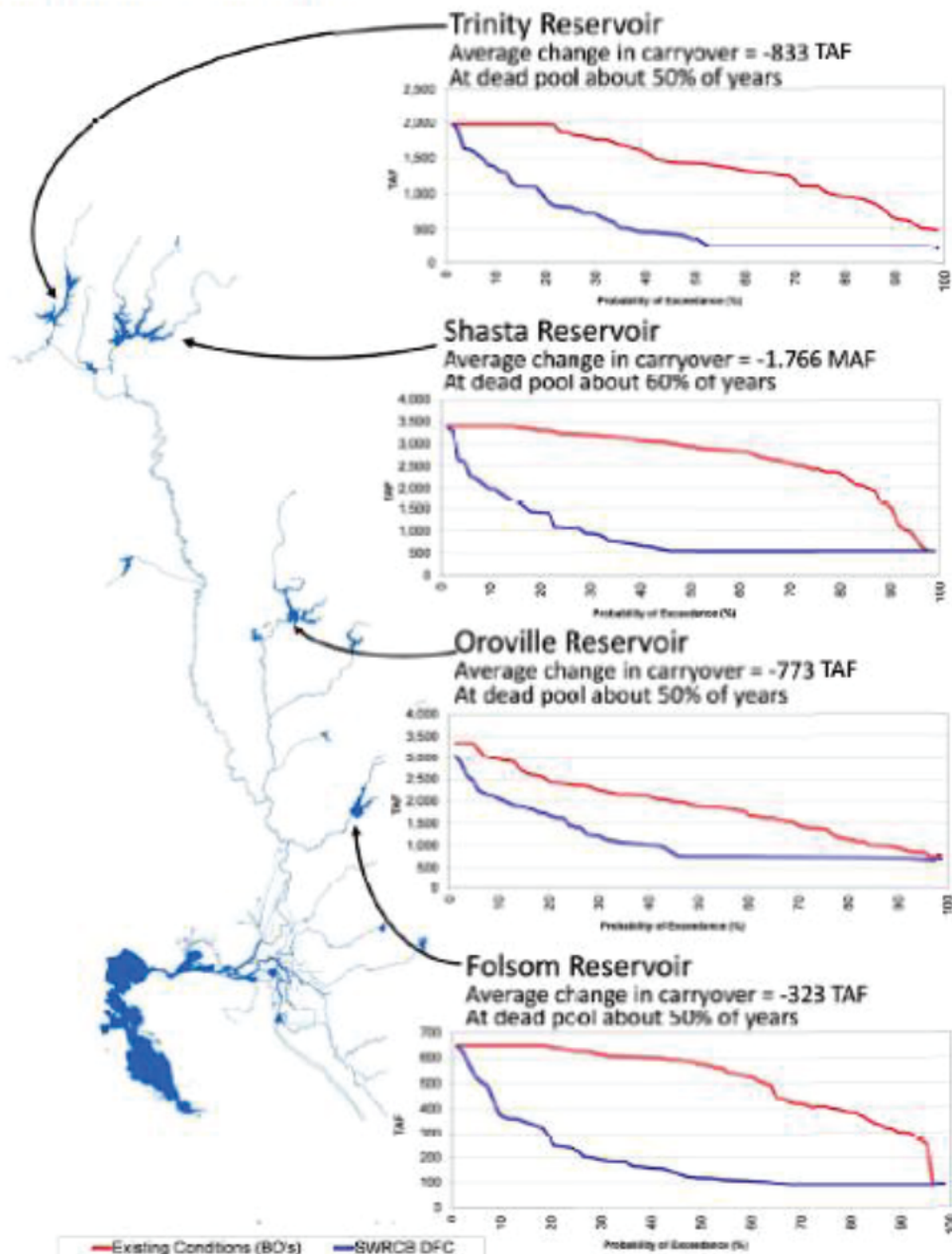
Average annual changes by 40-30-30 water year type (MAF)



Summary of Changes in Key River Flows - SWRCB DFC minus Existing (BO's)
Average monthly changes by 40-30-30 water year type (cfs)



Summary of Main CVP/SWP Reservoir Carryover - SWRCB DFC and Existing (BO's) End of September storage (TAF)

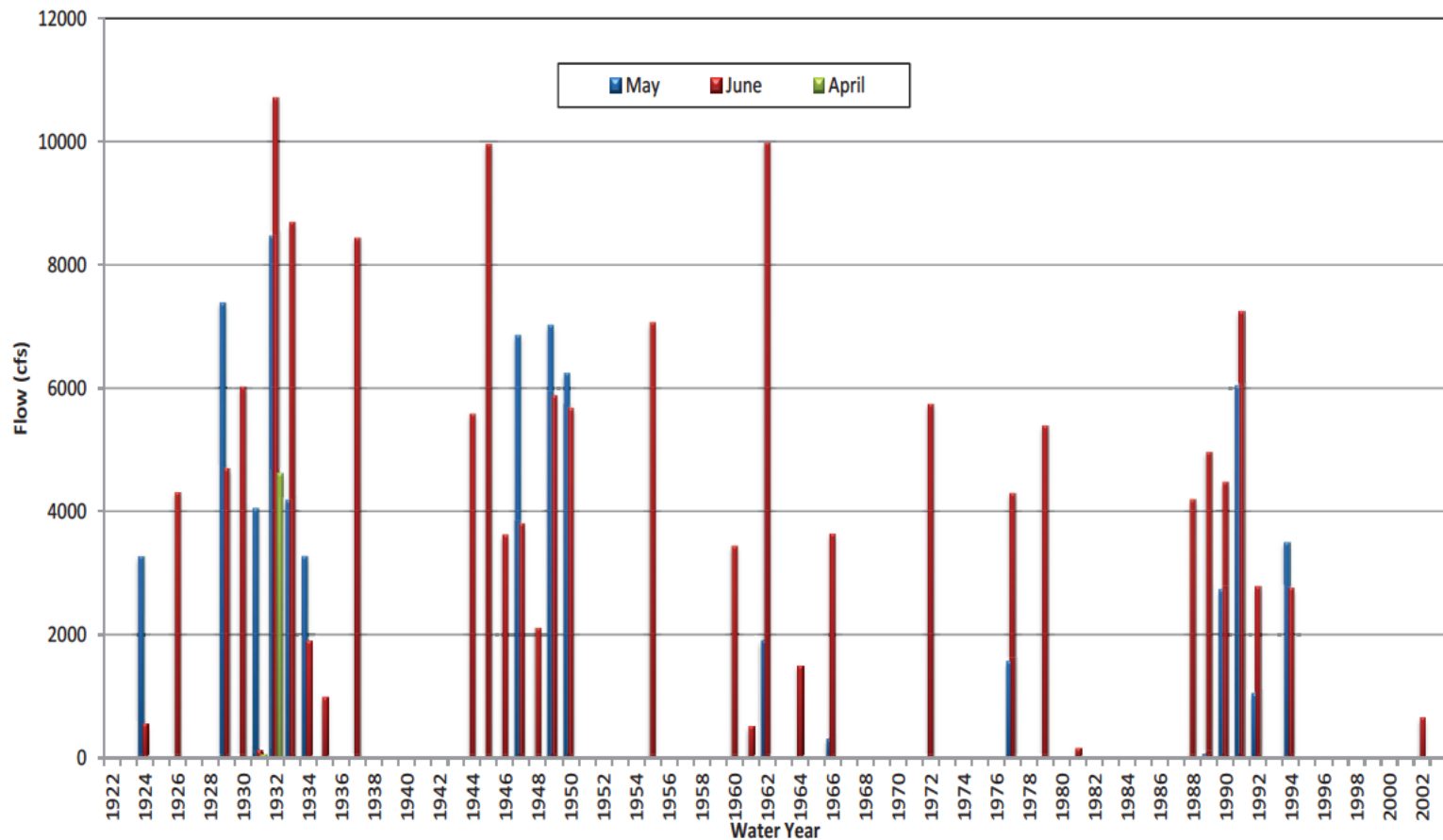


Results – Standards Not Met

- Not possible to meet all the Salmon and Smelt conditions of the Biological Opinions
- Violations of D1641 occur regularly
- Water not captured in the Winter and Spring not available in the summer and fall

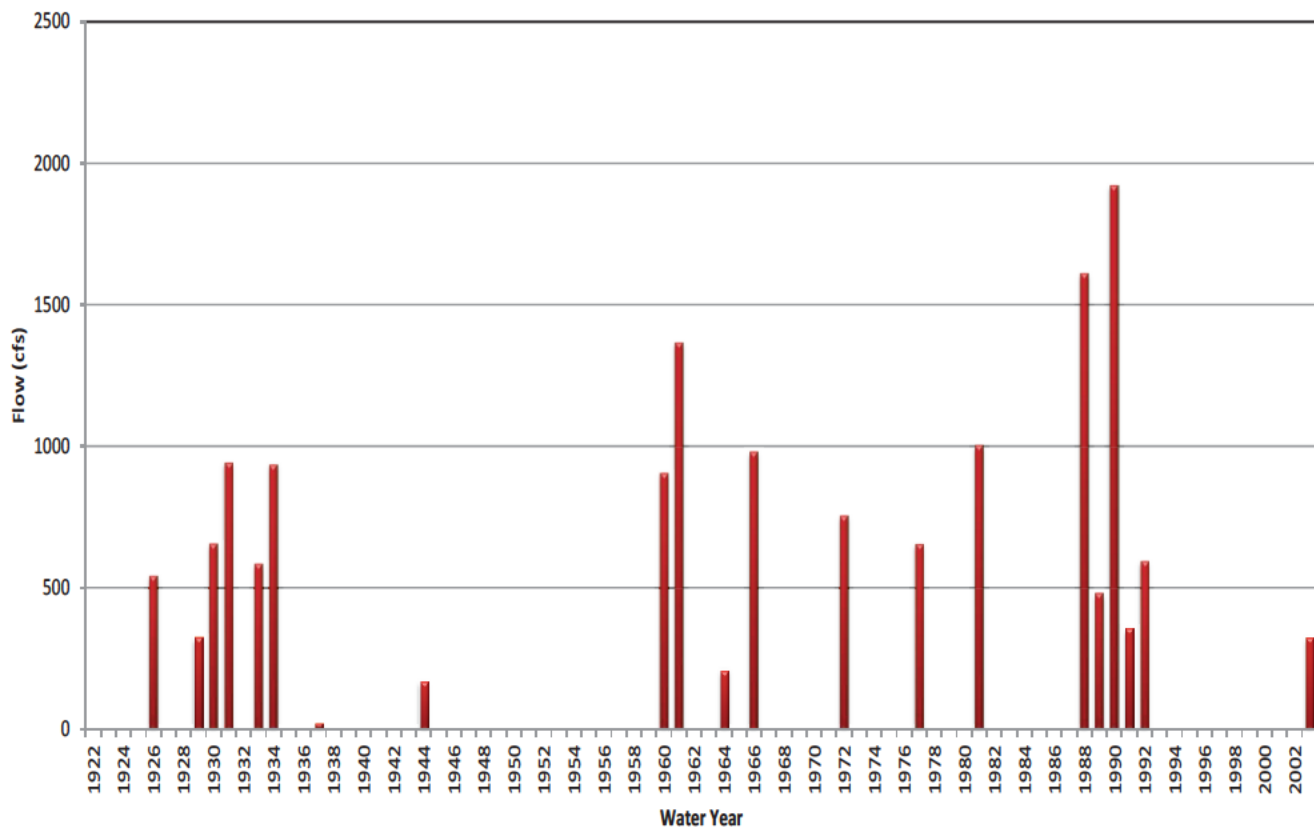
Shortage in Supply to Satisfy SWRCB DFC in April, May, and June

- Satisfying the SWRCB DFC along with numerous existing flow requirements result in demands on the system in excess of its ability to satisfy existing requirements and the SWRCB DFC



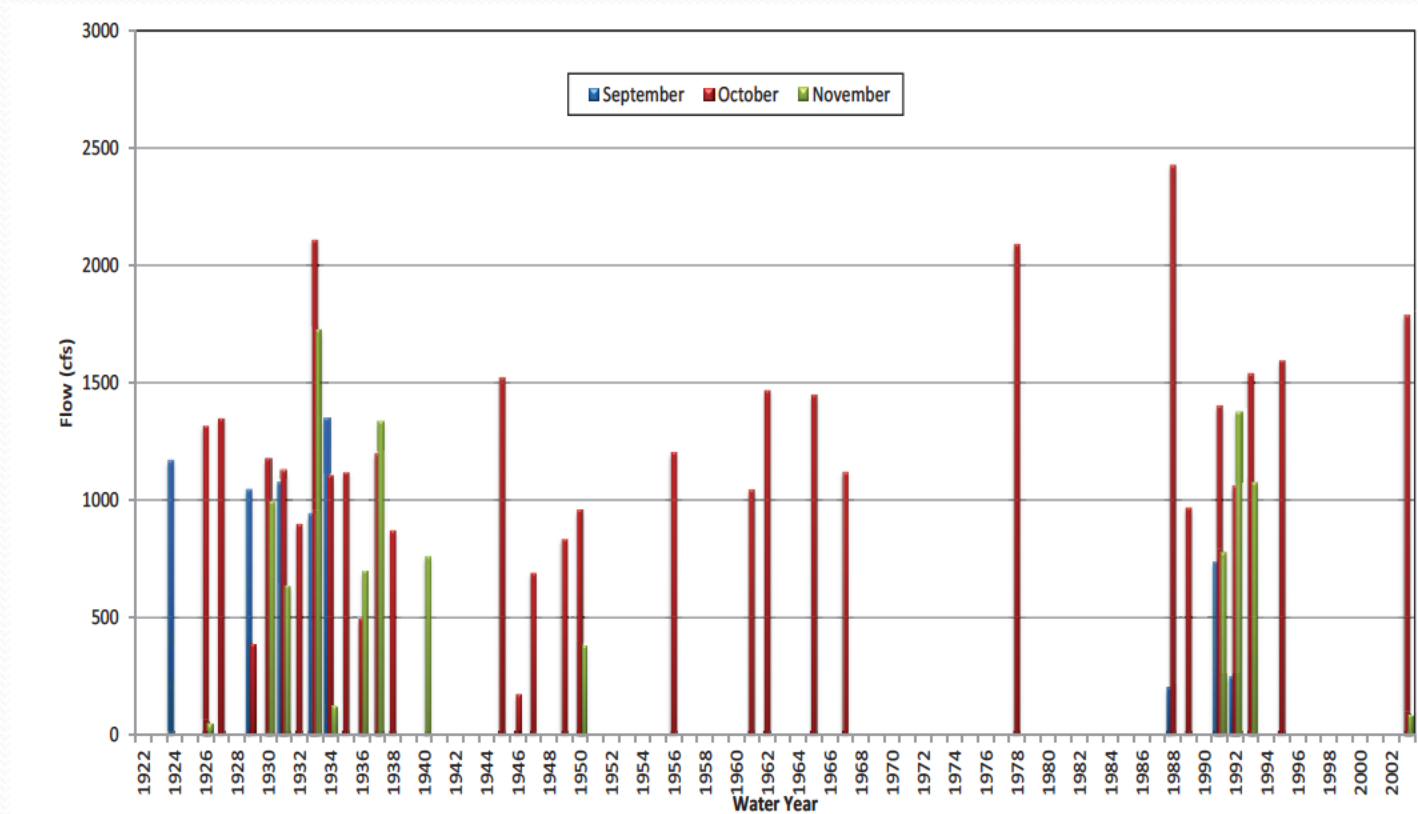
Violations in D-1641 Delta Outflow Requirements in July in SWRCB DFC Scenario

- Increases flows in winter and spring cause upstream reservoirs to hit dead pool causing shortage in upstream diversions (including Pre-1914 water rights) and inability to satisfy SWRCB D-1641 flow requirements



Violations in D-1641 Flow Requirement at Rio Vista in September, October, and November in SWRCB DFC Scenario

- Satisfying the SWRCB DFC cause water shortages leading to inability to meet SWRCB D-1641 flow requirements in the Sacramento River during fall months



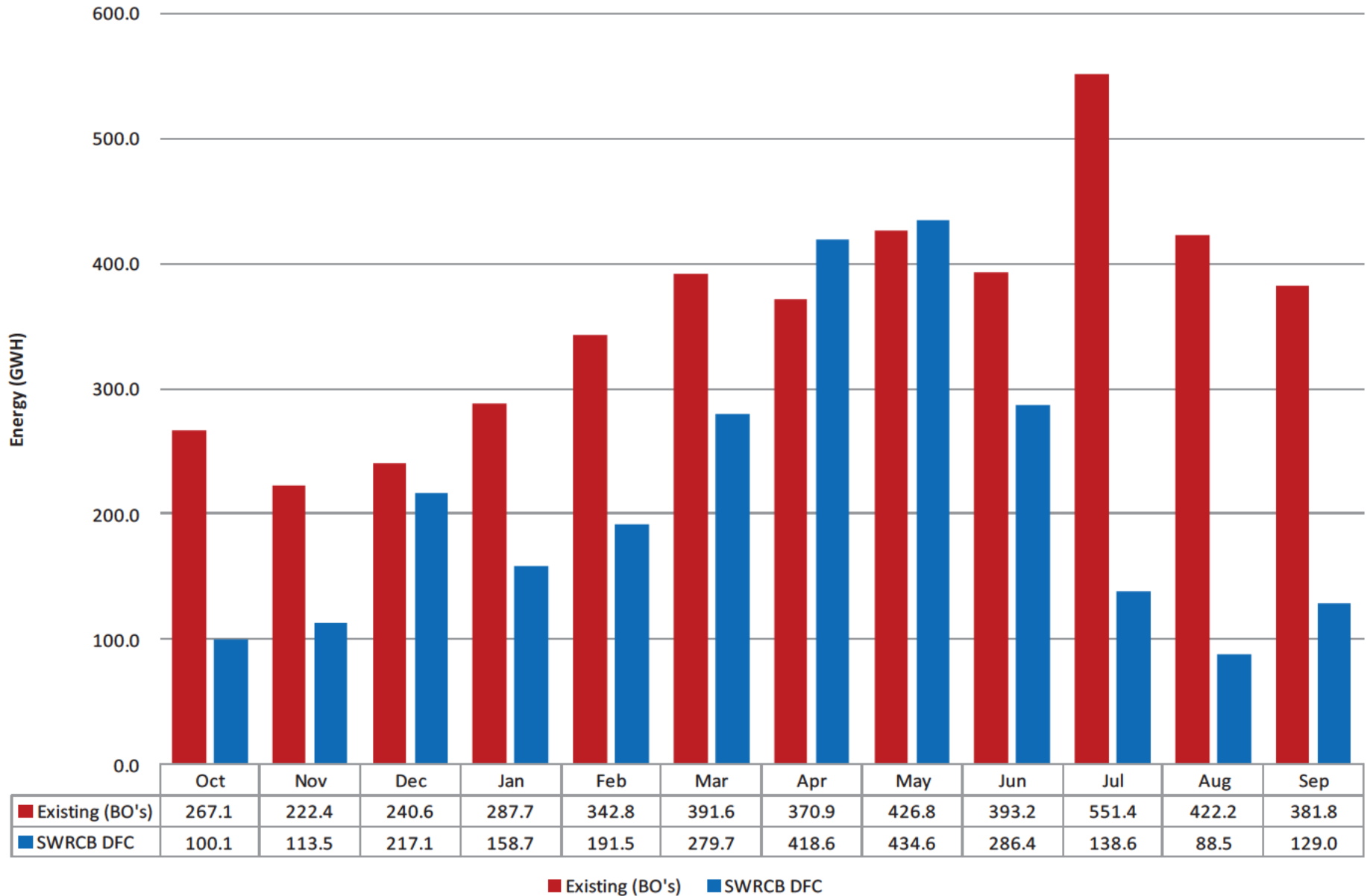
Results – Biological Impacts

- Reduced Fish habitat, reduced Cold Water Pools and higher downstream temperatures
 - Hotter water released
 - Lower summer flows causes equilibrium temperature to be much higher
 - Example: Only able to meet Sacramento River Temperature objectives in only 10% of the years
 - Effects on all runs of salmon, especially Winter Run
- Significant reductions on wildlife refuge water supplies causing impacts to the Pacific Flyway

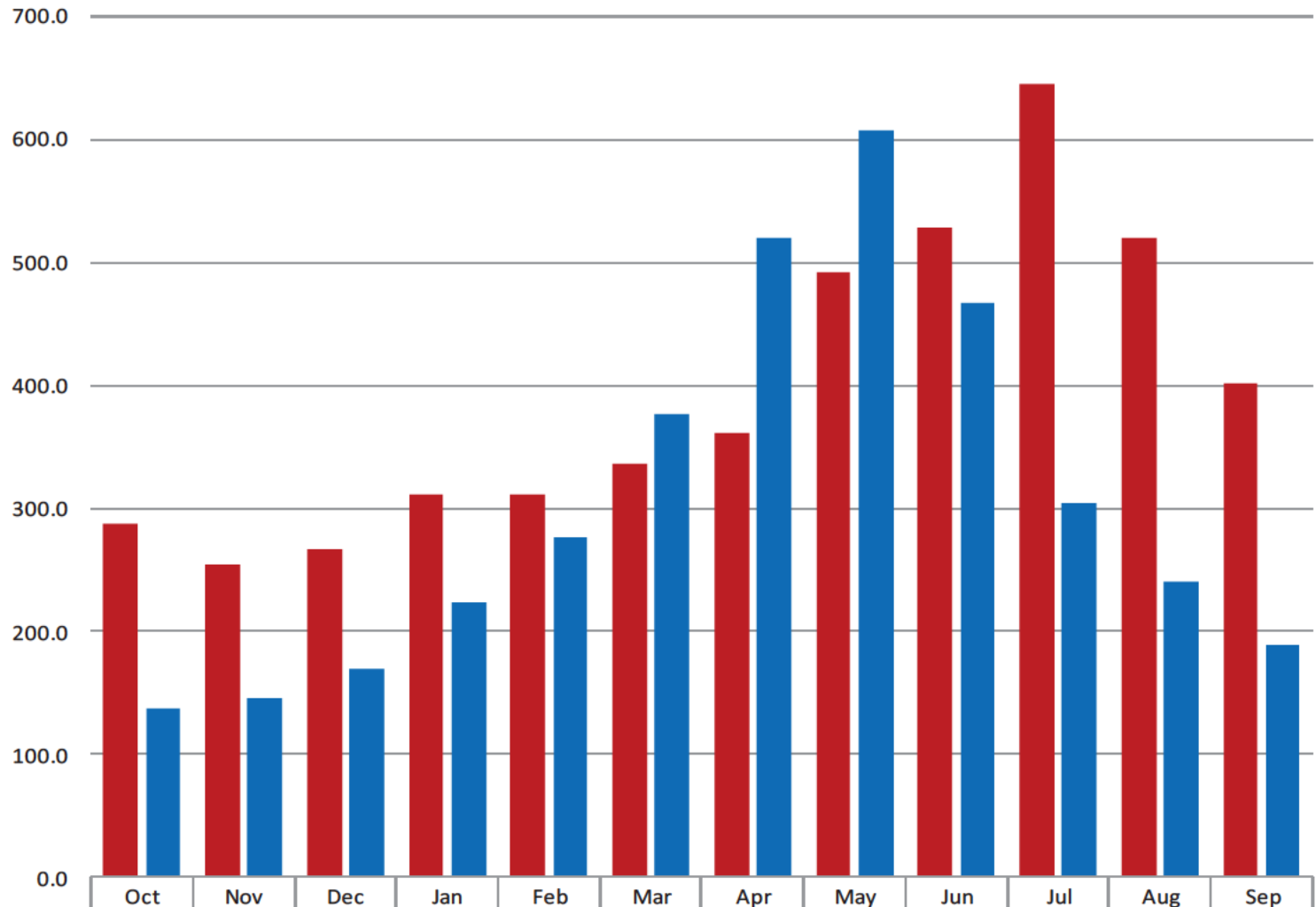
Results – Power Impacts

- Energy Generation at Load Center
 - Average Annual – 30% reduction
 - Average Summer – 50% to 75% reduction
 - Critical Year Average – 50% reduction
- On-Peak Capacity at Load Center
 - Reductions in every month

Average Year SWP Energy at Load Center (GWH)



Average Year CVP Energy at Load Center (GWH)



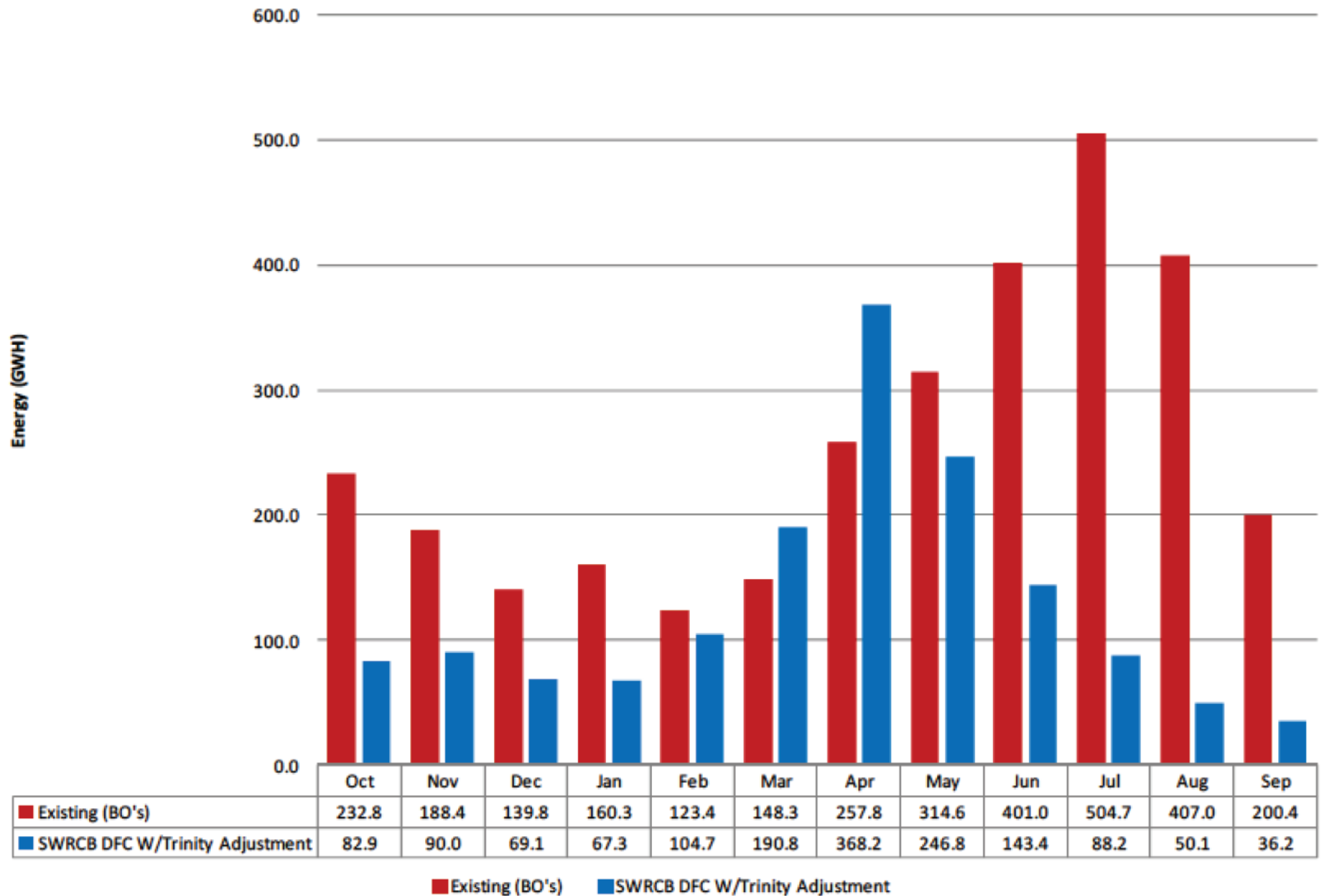
Existing (BO's)

SWRCB DFC W/Trinity Adjustment

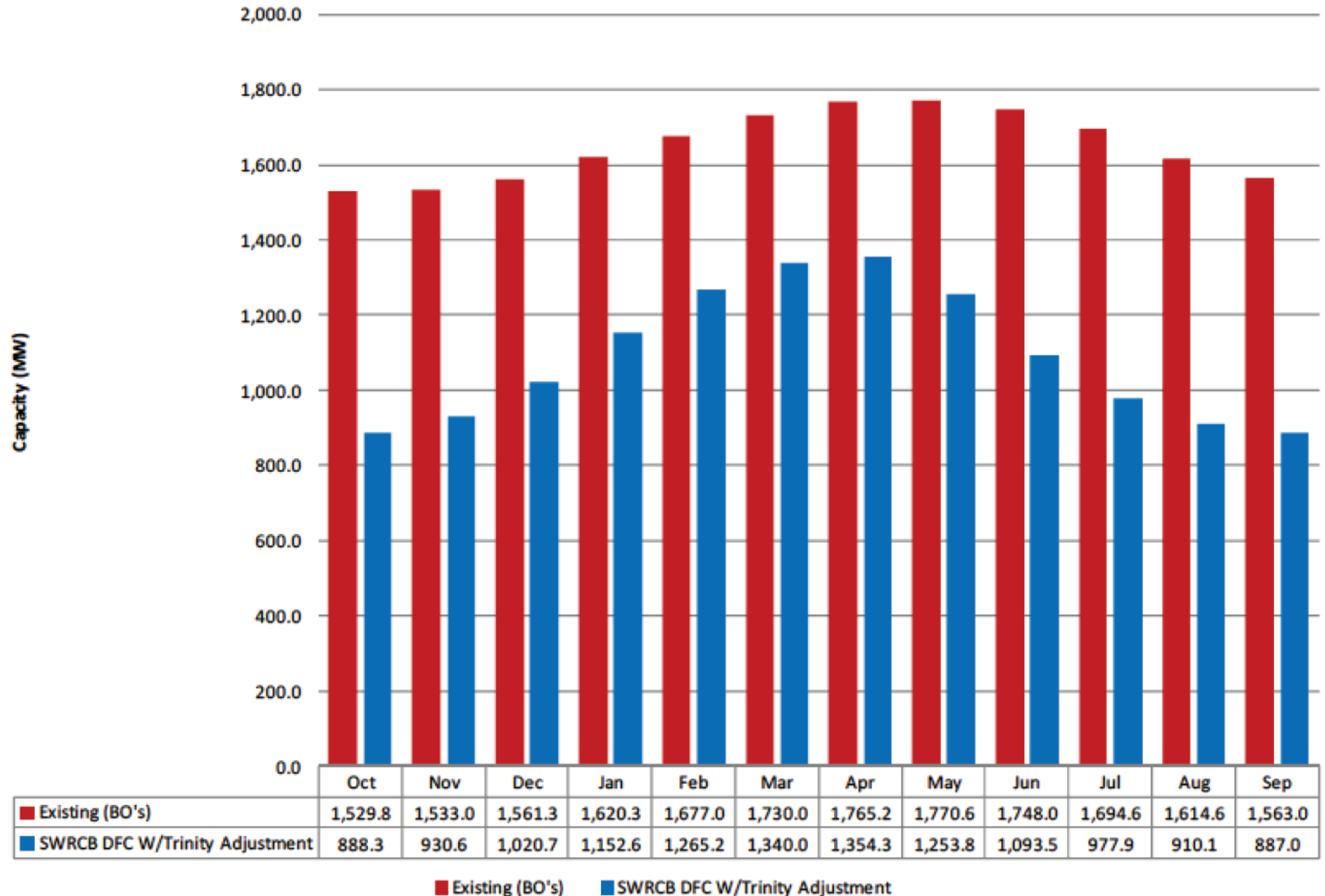
Existing (BO's)

SWRCB DFC W/Trinity Adjustment

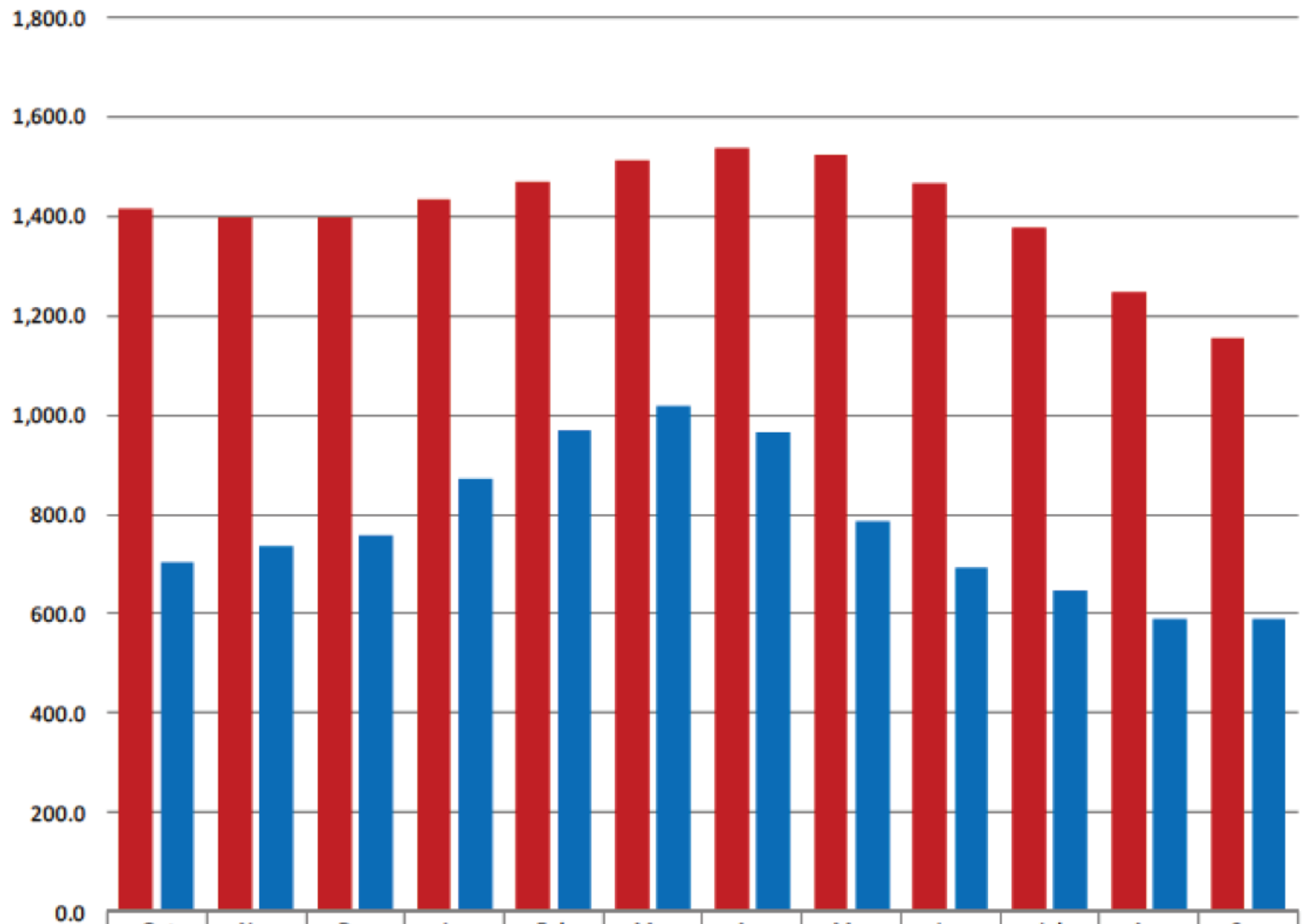
Critical Year CVP Energy at Load Center (GWH)



Average Year CVP On-Peak Capacity at Load Center (MW)



Critical Year CVP On-Peak Capacity at Load Center (MW)



Existing (BO's)	1,413.0	1,397.3	1,395.1	1,433.5	1,469.9	1,510.1	1,535.5	1,520.0	1,465.6	1,376.8	1,247.3	1,152.0
SWRCB DFC W/Trinity Adjustment	705.2	735.2	755.6	873.0	969.0	1,019.7	963.2	784.9	693.6	648.1	590.3	589.1

Existing (BO's) SWRCB DFC W/Trinity Adjustment

Results – Net Energy

- Reductions in energy production
- Reductions in energy needed due to loss of water supply (2.8 MAF of reduced exports)
- Assumptions
 - Ag - Fallowing
 - M&I – Desalinization
- Power cost of replacement water 200% higher than SWP/CVP project power

Power and Pumping Cost Reporting Metrics

Combined Model Results With Desal (3,260 kWh/AF)

				Existing	SWRCB DFC W/TRN Adj	Difference
Combined CVP and SWP Facilities						
Power Facilities						
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	9,008	6,199	-2,808
Generation Revenue	Total of all Facilities	(\$1,000)	Long Term	525,133	348,416	-176,716
Pumping Facilities						
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	8,916	3,008	-5,908
Power Costs	Total of all Facilities	(\$1,000)	Long Term	463,239	155,390	-307,850
Desal						
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	0	3,514	3,514
Power Costs	Total of all Facilities	(\$1,000)	Long Term	0	181,508	181,508
Total						
Net Generation	Total of all Facilities	(GWh)	Long Term	92	-323	-415
Net Revenue	Total of all Facilities	(\$1,000)	Long Term	61,894	11,519	-50,375

- Notes:
1. Long Term is the average quantity for the calendar years 1922-2002.
 2. 2009 Forecast (in 2007 \$); Prices are forward prices as of 08/25/2009 and were developed by DWR power portfolio section.(extrapolated from a linear trend that was fitted to the estimates beginning in late 2009 and ending in 2039)

Effects on Climate Change Policy

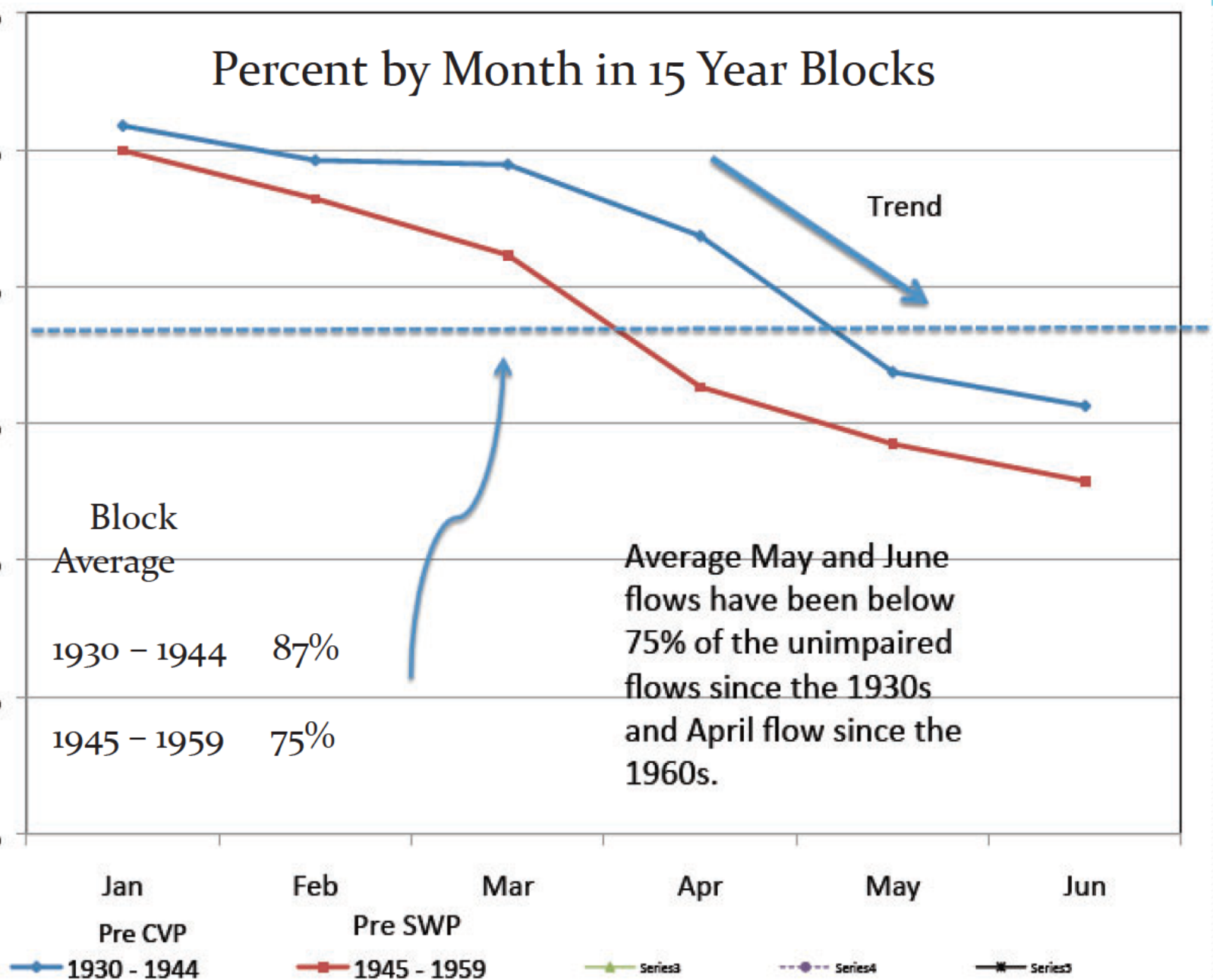
- Mitigation
 - Increase in GHG production due to alternative energy sources
 - Hurts AB32 Goals to reduce GHG production
 - Renewable energy sources hurt due to loss of needed system balancing provided by the SWP/CVP hydropower production and drop of pumping load
- Adaptation
 - Loss of cold water pools due to DFC leads to less adaption due to snow melt loss due to Climate Change

Natural Flow Paradigm (NFP) not reasonably implementable

- 75% of unimpaired flows never happened in the late spring historically in early 1900's
- NFP targets Mar, Apr, May, Jun periods – These flows have not changed since the 1960's
 - What problem are we trying to fix
- NFP targets water short Dry and Critical Years but effects all year's carryover to the summer and other years
- NFP makes new storage irrelevant
 - Current storage left unused – why build more

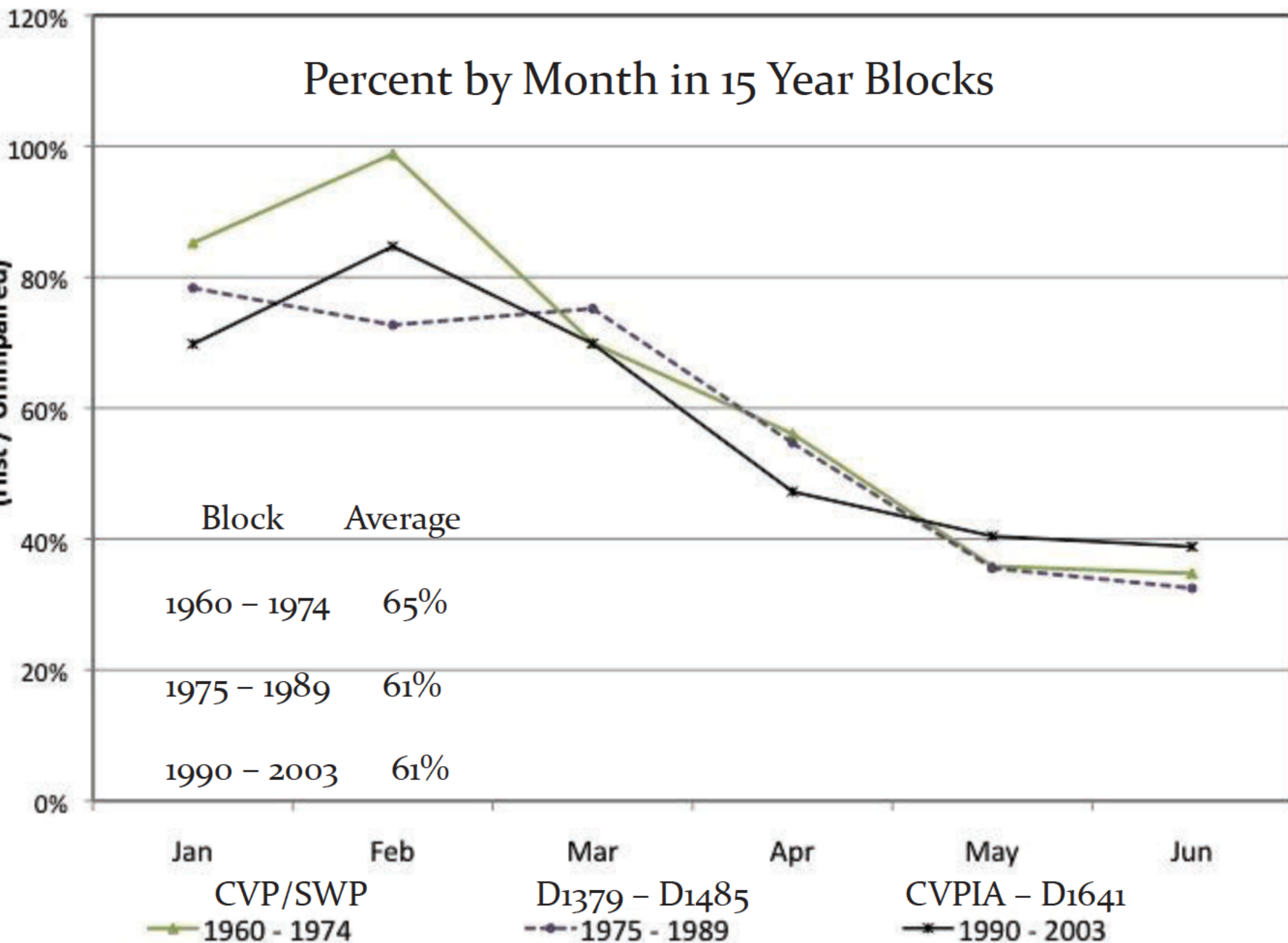
Percent by Month in 15 Year Blocks

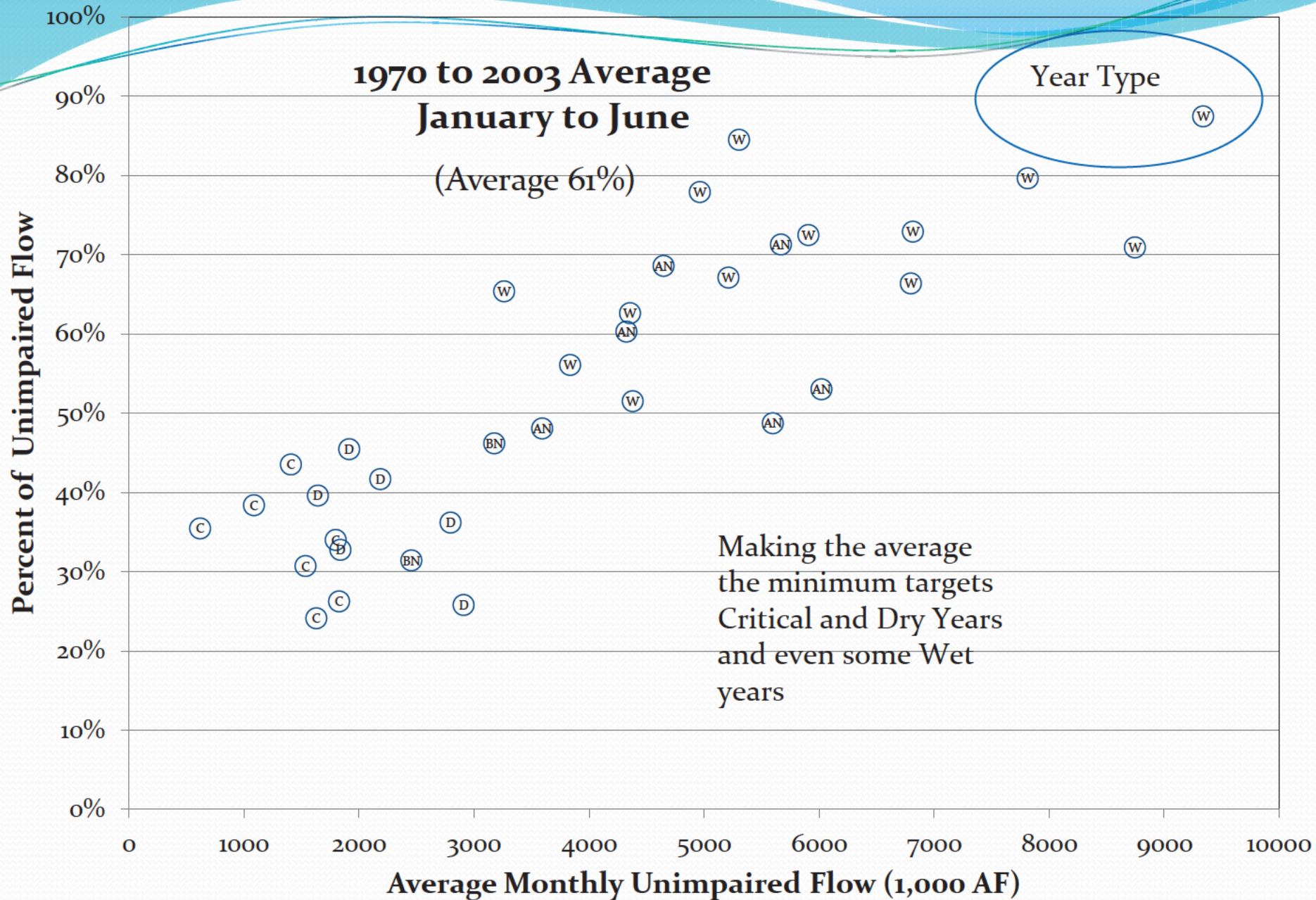
Percent of Unimpaired Flow
(Hist / Unimpaired)



Percent by Month in 15 Year Blocks

Percent of Unimpaired Flow
(Hist / Unimpaired)





Next Steps – What's coming

- SWRCB Strategic Plan 2008 – Wait for BDCP
- Pressure from Environmental Community and Delta Stewardship Council to set Delta Outflow Criteria by 2014. Start process next year
- SWRCB San Joaquin River Process
 - 20 to 60% Imp. Flow being evaluated – Dec 2011
 - Very hard to stop – no alternative being proposed
- Notice for SWRCB Delta Outflow proceeding coming soon
 - If all you have is a hammer, everything looks like a nail

Next Steps – Insights - the Process

- SWRCB proposed process - a water quality plan change
 - Under State Law but with EPA oversight
 - Quasi-legislative
 - Focuses on instream “needs”
 - No CEQA – “functional equivalent document”
- Past Delta actions based on Water Rights authority
 - Joint water right and water quality proceedings
 - State law only – water allocation – State’s Rights
 - Quasi-judicial
 - Balancing of public trust and public interests
 - CEQA required

Next Steps – Being Developed

- Outreach effort
 - Water and Power Community, SWRCB, Energy Commission, regulatory agencies, legislators, etc.
- Additional Studies
 - Demonstrate that a lower percentage of unimpaired flows does not work either
 - Retrospective of effects from D1485 to D1641
 - Detailed power replacement impacts, ancillary services
- Lack of scientific justification for percent of hydrograph paradigm for use in Delta Outflow or Sacramento R.
- Development of approach for SWRCB
 - Wait for BDCP and consider DFC in proceeding for Change of Point of Diversion – WC 85086(c)(2)

From: Tom Birmingham
Sent: Sunday, February 5, 2012 9:00 AM
To: 'Weaver, Kiel'
CC: 'Nelson, Damon'; 'Bernhardt, David L.'; joe.findaro@akerman.com
Subject: Hastings Amendment
Attachments: Hastings Amendment.docx

Kiel,
Attached is the language you asked for. I hope it is helpful and not too late.
Tom

Congress finds: (1) in the operation of reclamation projects throughout the seventeen western states, there is a long history of the United States deferring to the water law of the states; (2) operations of the Central Valley Project has been coordinated with operations of the California State Water Project pursuant to Public Law 99-546 (100 Stat. 3501); (3) as a result of those coordinated operations and the application of the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) to the coordinated operations of the Central Valley Project and the California State Water Project, those projects are now operated as a single project for purposes of protecting fish, wildlife, and habitat resources; and, (4) without preempting provisions of California law, the application of those state laws would frustrate Congress' authority to provide direction concerning operations of the Central Valley Project and unreasonably interfere with the private property rights of others established under California state law. These unique circumstances justify the preemption of California law by this title, and such preemption shall not be cited as precedent for preempting state law in any other state.

From: Nelson, Damon
Sent: Sunday, February 5, 2012 10:11 AM
To: 'tbirmingham@westlandswater.org'
Subject: Re: Hastings Amendment

I got your message. Yep, it came through.

Damon Nelson
Deputy Chief of Staff & Legislative Director
Congressman Devin Nunes
Sent from my BlackBerry Wireless Handheld

From: Tom Birmingham [mailto:tbirmingham@westlandswater.org]
Sent: Sunday, February 05, 2012 10:59 AM
To: Weaver, Kiel
Cc: Nelson, Damon; 'Bernhardt, David L.' <DBernhardt@BHFS.com>; joe.findaro@akerman.com
<joe.findaro@akerman.com>
Subject: Hastings Amendment

Kiel,
Attached is the language you asked for. I hope it is helpful and not too late.
Tom

From: Tom Birmingham
Sent: Sunday, February 5, 2012 10:35 AM
To: 'Nelson, Damon'
Subject: RE: Hastings Amendment

Thank you. For some reason, my email has been working only sporadically at the hotel.

From: Nelson, Damon [mailto:Damon.Nelson@mail.house.gov]
Sent: Sunday, February 05, 2012 9:11 AM
To: 'tbirmingham@westlandswater.org'
Subject: Re: Hastings Amendment

I got your message. Yep, it came through.

Damon Nelson
Deputy Chief of Staff & Legislative Director
Congressman Devin Nunes
Sent from my BlackBerry Wireless Handheld

From: Tom Birmingham [mailto:tbirmingham@westlandswater.org]
Sent: Sunday, February 05, 2012 10:59 AM
To: Weaver, Kiel
Cc: Nelson, Damon; 'Bernhardt, David L.' <DBernhardt@BHFS.com>; joe.findaro@akerman.com
<joe.findaro@akerman.com>
Subject: Hastings Amendment

Kiel,
Attached is the language you asked for. I hope it is helpful and not too late.
Tom

From: Nelson, Damon
Sent: Sunday, February 5, 2012 10:48 AM
To: 'tbirmingham@westlandswater.org'
Subject: Re: Hastings Amendment

I haven't heard much over the weekend on the bill. If they do the mark-up on Wednesday, it has to be announced by 10am tomorrow.

Damon Nelson
Deputy Chief of Staff & Legislative Director
Congressman Devin Nunes
Sent from my BlackBerry Wireless Handheld

From: Tom Birmingham [mailto:tbirmingham@westlandswater.org]
Sent: Sunday, February 05, 2012 12:35 PM
To: Nelson, Damon
Subject: RE: Hastings Amendment

Thank you. For some reason, my email has been working only sporadically at the hotel.

From: Nelson, Damon [mailto:Damon.Nelson@mail.house.gov]
Sent: Sunday, February 05, 2012 9:11 AM
To: 'tbirmingham@westlandswater.org'
Subject: Re: Hastings Amendment

I got your message. Yep, it came through.

Damon Nelson
Deputy Chief of Staff & Legislative Director
Congressman Devin Nunes
Sent from my BlackBerry Wireless Handheld

From: Tom Birmingham [mailto:tbirmingham@westlandswater.org]
Sent: Sunday, February 05, 2012 10:59 AM
To: Weaver, Kiel
Cc: Nelson, Damon; 'Bernhardt, David L.' <DBernhardt@BHFS.com>; joe.findaro@akerman.com <joe.findaro@akerman.com>
Subject: Hastings Amendment

Kiel,
Attached is the language you asked for. I hope it is helpful and not too late.
Tom

From: Bernhardt, David L.
Sent: Sunday, February 5, 2012 11:36 AM
To: Tom Birmingham; 'Weaver, Kiel'
CC: 'Nelson, Damon'; joe.findaro@akerman.com
Subject: RE: Hastings Amendment
Attachments: FindingtoH.R.1837.docx

Kiel and Tom: In an effort to save time, I have reformatted the language Tom provided into amendment form. The base language was not modified, beyond line numbering.

David

From: Tom Birmingham [tbirmingham@westlandswater.org]
Sent: Sunday, February 05, 2012 10:59 AM
To: 'Weaver, Kiel'
Cc: 'Nelson, Damon'; Bernhardt, David L.; joe.findaro@akerman.com
Subject: Hastings Amendment

Kiel,
Attached is the language you asked for. I hope it is helpful and not too late.
Tom

AMENDMENT TO H.R. 1873
OFFERED BY _____

At the end of the bill, add the following new section:

1 **SEC. ____. CONGRESSIONAL FINDINGS.**

2 Congress finds: (1) in the operation of reclamation projects throughout the
3 seventeen western states, there is a long history of the United States deferring to
4 the water law of the states; (2) operations of the Central Valley Project has been
5 coordinated with operations of the California State Water Project pursuant to
6 Public Law 99-546 (100 Stat. 3501); (3) as a result of those coordinated operations
7 and the application of the Endangered Species Act of 1973 (16 U.S.C. 1531 et
8 seq.) to the coordinated operations of the Central Valley Project and the California
9 State Water Project, those projects are now operated as a single project for
10 purposes of protecting fish, wildlife, and habitat resources; and, (4) without
11 preempting provisions of California law, the application of those state laws would
12 frustrate Congress' authority to provide direction concerning operations of the
13 Central Valley Project and unreasonably interfere with the private property rights
14 of others established under California state law. These unique circumstances
15 justify the preemption of California law by this title, and such preemption shall not
16 be cited as precedent for preempting state law in any other state.

From: Tom Birmingham
Sent: Tuesday, February 7, 2012 9:40 AM
To: 'Craig Manson'; DBernhardt@BHFS.com
CC: kris.polly@waterstrategies.com
Subject: Irrigation

Craig and David,

Today I ran into Kris Polly, the publisher of Irrigation, who said he is preparing an issue on ESA cases around the US. I suggested that rather than interviewing me for this publication, he should talk with the two of you because of your broader perspective on these cases. Please cooperate with Kris any way you can.

Thank you,

Tom

From: Bernhardt, David L.
Sent: Tuesday, February 7, 2012 9:41 AM
To: 'Tom Birmingham'; 'Craig Manson'
CC: kris.polly@waterstrategies.com
Subject: RE: Irrigation

[Absolutely.](#)

From: Tom Birmingham [mailto:tbirmingham@westlandswater.org]
Sent: Tuesday, February 07, 2012 11:40 AM
To: 'Craig Manson'; Bernhardt, David L.
Cc: kris.polly@waterstrategies.com
Subject: Irrigation

Craig and David,

Today I ran into Kris Polly, the publisher of Irrigation, who said he is preparing an issue on ESA cases around the US. I suggested that rather than interviewing me for this publication, he should talk with the two of you because of your broader perspective on these cases. Please cooperate with Kris any way you can.

Thank you,

Tom

From: Bernhardt, David L.
Sent: Tuesday, February 7, 2012 11:53 AM
To: Kris Polly
CC: Tom Birmingham; Craig Manson
Subject: Re: Irrigation

Kris: The best number to get me is my cell. [REDACTED] Call anytime.

Best,
David

David Bernhardt
[REDACTED]

On Feb 7, 2012, at 11:49 AM, "Kris Polly" <kris.polly@waterstrategies.com> wrote:

Gentlemen--

Thank you for the opportunity to speak with you about a possible article or articles for our April issue of the Irrigation Leader magazine. The April issue will focus on ESA issues. We welcome your thoughts and input and will be happy to make space available to you.

Please let me know a good time to speak with you over the phone to discuss.

Thank you for your time.

--Kris

Kris Polly
Water Strategies, LLC

On Feb 7, 2012, at 11:40 AM, "Bernhardt, David L." <DBernhardt@BHFS.com> wrote:

[Absolutely.](#)

From: Tom Birmingham [mailto:tbirmingham@westlandswater.org]
Sent: Tuesday, February 07, 2012 11:40 AM
To: 'Craig Manson'; Bernhardt, David L.
Cc: kris.polly@waterstrategies.com
Subject: Irrigation

Craig and David,

Today I ran into Kris Polly, the publisher of Irrigation, who said he is preparing an issue on ESA cases around the US. I suggested that rather than interviewing me for this publication, he should talk with the two of you because of your broader perspective on these cases. Please cooperate with Kris any way you can.

Thank you,

Tom

From: Jason Peltier

Sent: Monday, February 13, 2012 5:38 PM

To: Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: Rep. letter to POTUS

Attachments: LTR - President re Commerce Reorganization 2-8-12.pdf

Congress of the United States
Washington, DC 20515

February 8, 2012

The President
The White House
1600 Pennsylvania Avenue
Washington, D.C. 20500

Dear Mr. President:

Your recently announced proposal to streamline government and save taxpayer dollars comes as welcome news to those of us who share the commitment to reducing the size of government and making it operate more efficiently. We were especially pleased to hear about your plans to consolidate business and trade agencies to make them more accessible to the public. As Americans across this country look for ways to cut their own costs, we must also continue to do more to remove redundancies and barriers that make government more bureaucratic and stifle our economy.

During your 2011 State of the Union address, you raised one issue in particular that received a great deal of attention. While discussing the need to reorganize government, you highlighted the management of salmon as an example of just how complex and convoluted the federal government has become, stating that "the Interior Department is in charge of salmon while they're in fresh water, but the Commerce Department handles them in when they're in saltwater. And I hear it gets even more complicated once they're smoked." While this was probably meant to be tongue-in-cheek, the point resonates in places like California, where fisheries management among the various federal and state agencies has proven ineffective and has had dramatic impacts on the water supplies that two-thirds of the state depends upon.

As we have previously discussed, water that is used to irrigate one of America's richest agricultural regions in the San Joaquin Valley of California (Valley) has been limited in recent years as a result of two sets of different proposals, or "biological opinions," issued by the U.S. Fish and Wildlife Service (FWS) within the Department of the Interior and National Marine Fisheries Service (NMFS) within the Department of Commerce to protect endangered fish species within the region. In December 2008, FWS released proposals to protect Delta smelt and in June 2009, NMFS released proposals to protect winter and spring-run Chinook salmon, green sturgeon, Central Valley steelhead, and Southern Resident killer whales. Regrettably, these biological opinions call for substantial reductions in Central Valley and State Water Project water exports that are vital to farmers, farmworkers, and farming communities we represent south of the Sacramento-San Joaquin Delta.

As a result, you may be aware that the past several years have been wrought with high unemployment numbers in Valley cities and towns, litigation in courts, and water supply cutbacks continuing to hamper economic growth throughout the region.

In numerous instances, these two separate biological opinions have been shown to use flawed science because they only examine the factors that are within the jurisdiction of either agency, although they share the same missions and cover the same ecosystem. In this way, the biological opinions are narrow in scope, only looking at water exports and water temperature instead of factors that also affect fish abundance such as urban and agricultural runoff, wastewater discharges, predation, ocean conditions, upstream diversions, private unscreened diversions, and climate change. What's more, the data used by NMFS and FWS to formulate these proposals is not integrated, so they often work on entirely different timelines and even at cross purposes while most of California is left hanging in the balance.

Mr. President, we can do much better and we should. For these reasons and many more, your proposal to house the fish agencies together within one roof makes good sense and is long overdue. We lend our support to your efforts to move the National Oceanic and Atmospheric Administration (NOAA) into the Department of the Interior. We look forward to working with you on this proposal and other commonsense efforts to streamline government.



JIM COSTA
Member of Congress

Sincerely,



DENNIS CARDOZA
Member of Congress

From: Jason Peltier

Sent: Tuesday, February 14, 2012 9:19 AM

To: Jim Fiedler; T Birmingham (tbirmingham@westlandswater.org); Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: FW: Sustainability Forum on Water and the Delta

Come join the FUN!

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Media Alert

February 13, 2012

Press Release

Contact: Susan Eggman - (209) 535-1826

Eric Parfrey - (209) 462-4808

Natalia Orfanos - (209) 955-2555

Dale Stocking - (209) 471-3113

[Click here for flyer](#)

SUSTAINABILITY FORUM ON WATER AND THE DELTA

Stockton, CA - For the first time, proponents and opponents of the State's plans to transform the San Joaquin-Sacramento Delta will discuss the merits and drawbacks of the Delta Plan and the peripheral canal. The forum is scheduled Saturday, March 3, 2012 at the Civic Auditorium, in Stockton, and is open to the general public.

The purpose of this forum is to inform and explain to all residents in the Delta region the scope, and impact of changes that may forever alter the unique features of the Delta by redefining the character and future growth of communities that lie within the region, by eliminating family farms operating within the Delta, and by altering the fabric of life enjoyed by Delta residents.



DONATE NOW ►

Join Our Mailing List!



Donate Now

Restore the Delta is working everyday through public education and citizen activism to ensure the restoration and future sustainability of the California Delta. Your general contribution can help us sponsor outreach

"A Primer on Water and the Delta" is the first of three forums that are being hosted by the same coalition of environmental advocates, private business and local government that held community forums the past two years on how to employ sustainable practices in everyday life. Members of the coalition are the Sierra Club, Campaign for Common Ground, the A.G. Spanos Companies, the Stockton City Council and the San Joaquin Council of Governments.

"Water is vital to our local economy, our farms, and our cities. As residents of the region and stewards of this unique estuary and habitat to many species, it is important that we stay informed and alert to insure that we retain local control over our water and our future," said Susan Eggman City Council Member.

Presentations at the forum will be made by Dr. Jerry Meral, Deputy Secretary for the California Natural Resources Agency; Jason Peltier, Chief Deputy General Manager, Westlands Water District; Jim Fiedler, Chief Operating Officer, Santa Clara Valley Water District; Ann Johnston, Mayor of Stockton and Chair for the Delta Coalition; John Herrick, an expert on local water issues; Jeff Michael, Director of the Business Forecasting Center, University of the Pacific; and Barbara Barrigan-Parilla, Executive Director of Restore the Delta.

The forum will begin at 8:30 a.m. and conclude at 12:00 noon. Each presentation will be followed by a question and answer period. Moderator for the entire series will be Susan Eggman, a City Council Member of the City of Stockton and Professor of Social Work at the California State University at Sacramento.

Members of the organizing committee are Dale Stocking, Sierra Club; Eric Parfrey, Campaign for Common Ground; Councilwoman Susan Eggman, Stockton City Council; Natalia Orfanos, A.G. Spanos Companies; and Andrew Chesley, Executive Director of the San Joaquin Council of Governments.

###

events, enable us to educate Californians on what makes the Delta so special, and assist us in building a coalition that will be recognized by government water agencies as they make water management decisions.

Restore the Delta is a charitable 501(c)3 organization. Donations are tax deductible.

Click on the button below to go to our secure PayPal account.

DONATE NOW ►

Restore the Delta is a grassroots campaign committed to making the Sacramento-San Joaquin Delta fishable, swimmable, drinkable, and farmable to benefit all of California. Restore the Delta - a coalition of Delta residents, business leaders, civic organizations, community groups, faith-based communities, union locals, farmers, fishermen, and environmentalists - seeks to strengthen the health of the estuary and the well-being of Delta communities. Restore the Delta works to improve water quality so that fisheries and farming can thrive together again in the Sacramento-San Joaquin Delta.

Sincerely,
Barbara Barrigan-Parrilla
Restore the Delta
Email: barbara@restorethedelta.org
Web: <http://www.restorethedelta.org>

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Restore the Delta | 10100 Trinity Parkway Suite #120 | Stockton | CA | 95219

From: Tom Birmingham
Sent: Wednesday, February 22, 2012 7:37 PM
To: 'Costa, Jim'
CC: 'Bernhardt, David L.'; joe.findaro@akerman.com; 'Tony Coelho'
Subject: Potential Democrat Votes

Jim,

As we discussed on the telephone, the following are the Democrat members of the House that we have identified as potential yes votes on HR 1837:

*Altmire, Jason (PA);
Barrow, John (GA);
Bishop, Sanford (GA);
Bishop, Sanford (GA);
Boren, Dan (OK);
Boswell, Leonard (IA);
Cooper, Jim (TN);
Critz, Mark (PA);
Cuellar, Henry (TX);
Donnelly, Joe (IN);
Green, AL (TX);
Green, Gene (TX);
Hinojosa, Ruben (TX);
Hochul, Kathy (NY);
Kissell, Larry (NC);
Matheson, Jim (UT);
McIntyre, Mike (NC);
Owens, Bill (NY);
Peterson, Collin (MN);
Richmond, Cedric (LA);
Ross, Mike (AK)*

There may be others; please let us know. And if there is anything that David Bernhardt or Joe Findaro can do to help with these members, please let them know.

As always, thank you for your help.

Tom

From: Jason Peltier

Sent: Friday, February 24, 2012 7:19 AM

To: T Birmingham (tbirmingham@westlandswater.org); Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

CC: 'Jerry Johns'

Subject: FW: SWRCB Chair letter to DSC Chair

Attachments: Hoppin Letter to Isenberg 022212.pdf

Good letter.

Also, if you are not on the Water-Power Work Group list below and would like to engage or track this effort, contact Jerry Johns to be added.

From: Jerry Johns [mailto:jjohnswater@gmail.com]

Sent: Thursday, February 23, 2012 9:33 PM

To: etiedemann@kmtg.com; jfeider@charter.net; joyw@mid.org; Allen Short; Andy Fecko; Anthony Andreoni; Ara Azhderian; bbuck@sfcwa.org; Brenda Fotos; Brent ten Pas; Craig T. Jones; Dave Breninger; David Guy; Dennis Westcot; Ed Horton; Einar Maisch; Hadley, Elizabeth; Howard Hirahara; Hutton,Paul H; Ian Caliendo; Jan Goldsmith; Jane Cirrincione; Jason Peltier; Jeff Shields; Jennifer West; Jerry Toenyas; Krausse, Mark; Leslie Dunsworth; Mark Rentz; Melissa Poole; Paul Olmstead; Rebecca D Sheehan; Scott Hamilton Ph. D.; Sonja Anderson; Steve Sorey; Terry Erlewine; Tim Haines; Tim O'Laughlin; Tim Quinn; Tom Kabat

Cc: Blair Jackson; Buzz Link; Don Imamura; Hari Modi; Lowell Watros; Nicholas Markevich; Norm Worthington; Rodgers, Kirk; Tom Patton; Walter Bourez

Subject: Fwd: SWRCB Chair letter to DSC Chair

Water and Power Policy Group,

Mark is right. This is a great letter. At least Charlie seems to be hearing what we are saying.

----- Forwarded message -----

From: **Mark Rentz** <MarkR@acwa.com>

Date: Thu, Feb 23, 2012 at 5:51 PM

Subject: SWRCB Chair letter to DSC Chair

To: Jennifer Persike <JenniferP@acwa.com>, Jerry Johns <jjohnswater@gmail.com>, Jennifer West <geyerw@pacbell.net>

Jerry: Very important letter. Please circulate to the Water-Power Work Group before tomorrow morning's meeting. Jennifer West, you may want a copy with you for tomorrow afternoon's meeting.

MSR

Mark S. Rentz, Esq

Director of Regulatory Affairs

Association of California Water Agencies

910 K St., Ste 100

Sacramento, CA 95814

[916-441-4545](tel:916-441-4545)

THAT MEN DO NOT LEARN VERY MUCH FROM HISTORY IS THE MOST IMPORTANT OF ALL LESSONS THAT HISTORY HAS TO TEACH.

~~ ALDOUS HUXLEY ~~

You have received this message from the Association of California Water Agencies (ACWA) on behalf of its members, supporters, and allied interests. To protect their privacy, ACWA policy prohibits the unauthorized reuse, redistribution, reproduction or retransmittal of this material or the distribution list.

--

Jerry Johns

jjohnswater@gmail.com

[\(916\) 995-9266](tel:(916)995-9266)

State Water Resources Control Board

February 22, 2012

Mr. Phil Isenberg
Chair, Delta Stewardship Council
980 Ninth Street, Suite 1500
Sacramento, California 95814

Dear Chair Isenberg:

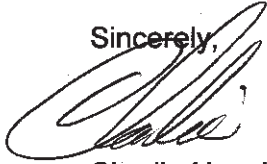
I understand that some of the comments that the Delta Stewardship Council has received on its draft Delta Plan rely on the State Water Board's 2010 report, Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem, in recommending the creation of a "more-natural flow regime." I am writing to reiterate caveats accompanying the report that limit the report's use in support of any particular numeric flow requirements.

The 2009 Delta Reform Act stated that the report would "inform planning decisions for the Delta Plan," but that it would not be "predecisional." The report, therefore, states that none of the determinations in the report have regulatory or adjudicatory effect. The report's flow criteria cannot be taken as establishing standards, instead, water quality objectives and water rights decisions informed by the report's flow criteria must ensure the reasonable protection of beneficial uses, which will entail balancing of competing beneficial uses of water, including municipal and industrial uses, agricultural uses, and other environmental uses. There are good reasons for both the State Water Board and the Council to recognize by these limitations. For example, the board's report was not required to evaluate how implementing new Delta flow criteria would impact streamflows previously implemented for salmon and steelhead in the Delta's tributaries or water temperatures in those tributaries. A great deal of work has been done to improve conditions for fish and wildlife, especially salmon and steelhead, in some tributaries and it would be counterproductive to undermine that work. These public trust considerations and other legal requirements will be crucial when the State Water Board does consider new regulatory objectives for the Delta streamflows.

When the board considers regulatory flow objectives, it also evaluates how their implementation could impact California's water supplies, as well as hydroelectric generation and public safety, including flood control. For example, the annual and seasonal variations in California's climate, water supplies, and hydroelectric generation impact storage. New Delta flow objectives could impact the ability to store water and, in turn, impact future hydroelectric generating capacity and water supplies. The Porter-Cologne Water Quality Control Act requires the board to weigh such concerns in determining how to ensure "reasonable protection of beneficial uses," just as the Delta Reform Act requires the Council to adopt a Delta Plan that "furthers the coequal goals."

I appreciate the challenge before the Delta Stewardship Council. I encourage you to recognize the unique context in which the board prepared its Flow Criteria report and more importantly, all of the public trust values and beneficial uses that we will be required to evaluate with respect to any new Delta Flows.

Sincerely,

A handwritten signature in black ink, appearing to read 'Charlie Hoppin', written over the word 'Sincerely,'.

Charlie Hoppin
Chairman

cc: Jerry Meral, Deputy Secretary
California Natural Resources Agency

Matthew Rodriguez, Secretary
California Environmental Protection
Agency

From: Nelson, Damon

Sent: Tuesday, February 28, 2012 2:30 PM

To: 'Bernhardt, David L.' (DBernhardt@BHFS.com); Thomas Birmingham (tbirmingham@westlandswater.org)

Subject: FW: Western States Water Council and H.R. 1837

Attachments: Letter to Rep McClintock and Rep Napolitano.pdf

From: Nelson, Damon

Sent: Tuesday, February 28, 2012 10:23 AM

To: Nelson, Damon

Subject: Western States Water Council and H.R. 1837

You all received an email last night from the Western States Water Council. What does the WSWC letter mean?

1. **They didn't read the bill.** Section 202 as described in their letter no longer exists. It has been revised and moved to Sec. 204. Also, in their failure to read the bill, they didn't see Title V which was added by Reps. Tipton and Gosar (two western Members of Congress) and supported on a bipartisan basis. That title says that the California water system is unique and any actions prescribed in this bill shall not be considered precedent.
2. **They don't understand the California water system.** As the Tipton/Gosar amendment states, the California water system is unique in that it has a federal water project and a state water project that are integrated as one unit. This occurred in the 1980's, when the state asked the federal government to preempt state law and require the coordinated operation of the state and federal water projects. This coordination/pre-emption occurred as a result of law authored by Rep. George Miller (D-CA). In the 1990s, Rep. George Miller, again working with the state, enacted a massive preemption of state law by imposing an environmental regulatory superstructure on top of the state and federal water projects. Again in the 1990s, the state asked the federal government to agree to the Bay-Delta Accord, which preempted state law to govern the operations of the Bay-Delta. Section 108 of H.R. 1837 simply requires the state to comply with the Bay-Delta Accord. This is not preemption. It is holding the state to an agreement it made.
3. **They support spending \$2 million a fish.** The current program is a massive waste of taxpayer money. If you were to agree with WSWC's concerns with Sec. 202 (again, it isn't in that section anymore), then you support spending \$1.2 billion in taxpayer money to put salmon into a river that hasn't seen salmon in 70 years. This is a colossal waste of money at a time when the federal deficit is over a trillion dollars.
4. **They support 20-40% unemployment.** Section 108 of the bill will turn on the pumps and get the water flowing on a reliable basis to families and farms in the San Joaquin Valley. Without that water, the unemployment rate increased to 20% region wide with some pockets up to 40%. While WSWC may be ok with this level of unemployment and are fine with long food lines, we do not agree.
5. **They don't support private property rights.** This bill restores the private property water rights that have been seized by the state over the past twenty years. Protecting these private property rights is enshrined in Section 1 & 5 of the 14th Amendment to the United States Constitution. Here is a link if you need a refresher on the Constitution. <http://www.house.gov/house/Constitution/Constitution.html>

So, keep these in mind when you are deciding on the credibility of the WSWC letter.

Office Mission To ensure our constituents and all Americans live free and prosperous lives in a healthy and safe environment by serving, communicating, protecting and representing them in a professional and caring manner.





WESTERN STATES WATER COUNCIL

5296 South Commerce Drive, Suite 202 / Murray, Utah 84107 / (801) 685 2555 / FAX (801) 685 2559

Web Page: www.westgov.org/wswc

August 1, 2011

The Honorable Tom McClintock, Chairman
Subcommittee on Water and Power
House Committee on Natural Resources
1522 Longworth House Office Building
Washington, DC 20515

The Honorable Grace Napolitano, Ranking Member
Subcommittee on Water and Power
House Committee on Natural Resources
H2-186 Longworth House Office Building
Washington, DC 20515

Dear Chairman and Ranking Minority Member,

On behalf of the Western States Water Council and our eighteen member states, I am writing to express our strong opposition to H.R. 1837 as an unwarranted intrusion on the rights of the states to allocate and administer rights to the use of state water resources. Moreover, it is inconsistent with evolving principles of successful management of our water resources to achieve a sustainable balance between important economic and environmental goals.

Specifically, Section 202 of H.R. 1837 would set aside Section 8 of the Reclamation Act of 1902 and effectively preempt California state law setting requirements for protection of the San Joaquin River. Section 108(b) would preempt state law as applied to water project operations affecting endangered species, including both the federal Central Valley Project and the State owned and operated State Water Project. The preemptive effect of Sections 108(b) and 202 would apply notwithstanding the absence of any conflict between state and federal law.

The Council opposes any weakening of the deference to state water law as now expressed in Section 8 as inconsistent with the policy of cooperative federalism that has guided Reclamation Law for over a century. This is a threat to water right and water right administration in all the Western States.

The water planning, development, management and protection challenges in the Sacramento-San Joaquin Bay-Delta System are serious, but not unique to California, as similar economic and environmental needs must be balanced across the West and the Nation. Any effective solution to California's water and environmental needs must be addressed at the state and local level, in collaboration with federal agencies under existing federal authorities.

Clean, reliable water supplies are essential for communities throughout the West and the Nation to maintain and improve their citizens' quality of life. Sufficient supplies of good quality water are essential for strong state and national economies, and require achieving a balance protection of water supply sources and the environment.

The States are responsible for allocating and administering rights to the use of water for myriad uses; and are in the best position to identify, evaluate and prioritize their own needs. States and their political subdivisions also share primary responsibility for planning and managing our Nation's surface and ground water resources, both quantity and quality.

Successful environmental protection policy and implementation is best accomplished through balanced, open and inclusive approaches at the ground level, where interested stakeholders work together to formulate critical issue statements and develop locally-based solutions to those issues. Collaborative approaches more often result in greater satisfaction with outcomes and broader support, and increase the chances of involved parties staying committed over time to implementing agreed upon solutions. Both the State of California and the Department of Interior have testified before this subcommittee in opposition to H.R. 1837 and specifically those sections preempting state law.

In conclusion, the Council cannot support H.R. 1837. It is an ill-advised attempt to circumvent ongoing efforts to define and implement sustainable solutions to myriad complex challenges that must be addressed in the context of balancing current and future economic and environmental needs and demands – recognizing the importance of intergovernmental partnerships – and respecting our diverse roles and responsibilities through maintaining the historic deference to state water law embodied in Section 8 of the Reclamation Act. Legislation preempting or discharging requirements for compliance with state law is not consistent with principles of federalism and a balanced approach to resolving conflicts.

We welcome the subcommittee's attention to these very serious and often intractable problems and hope to be able to continue to work together on effective and lasting solutions.

Sincerely,

A handwritten signature in black ink, reading "Weir Labatt, III". The signature is written in a cursive, flowing style with a prominent "W" and "L".

Weir Labatt, III
Chairman

From: Jason Peltier

Sent: Tuesday, February 28, 2012 3:58 PM

To: T Birmingham (tbirmingham@westlandswater.org); Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: FW: FYI

WATER POLICY:

Obama threatens to veto GOP bid to shift Calif. allocations

Anne C. Mulkern, E&E reporter

Published: Tuesday, February 28, 2012

The Obama administration today threatened to veto a GOP effort to reroute some of California's water from environmental uses to farms and businesses.

The administration in a statement said it strongly opposes [H.R. 1837](#), the "Sacramento-San Joaquin Valley Water Reliability Act," "because the bill would unravel decades of work to forge consensus, solutions, and settlements that equitably address some of California's most complex water challenges."

The measure from Rep. Devin Nunes (R-Calif.) would overturn a 2009 agreement for water use in the Golden State's San Joaquin River. That settlement became federal law when Congress passed legislation that codified a court settlement.

"H.R. 1837 would undermine five years of collaboration between local, state, and federal stakeholders to develop the Bay-Delta Conservation Plan," the administration said. "It would codify 20-year old, outdated science as the basis for managing California's water resources, resulting in inequitable treatment of one group of water users over another. And, contrary to 100 years of reclamation law that exhibits congressional deference to State water law, the bill would preempt California water law.

"The bill also would reject the long-standing principle that beneficiaries should pay both the cost of developing water supplies and of mitigating any resulting development impacts, and would exacerbate current water shortages by repealing water pricing reforms that provide incentives for contractors to conserve water supplies."

Repeal of the settlement agreement on water "would likely result in the resumption of costly litigation, creating an uncertain future for river restoration and water delivery operations for all water users on the San Joaquin River," the administration statement also said.

Republicans have said the current settlement puts the needs of fish above those of people. Nunes' bill would replace current law with 1994 rules from an agreement known as the Bay-Delta Accord. The measure would set compliance with the Endangered Species Act to that year.

The House Rules Committee today is deciding which amendments will be allowed in this week's floor debate on the bill ([*E&E Daily*](#), Feb. 27, 2011). The Natural Resources Committee earlier this month passed the bill in a 27-17 vote, following a marathon hearing.

"This is not surprising coming from an administration that has done nothing to help the struggling California farmers and farm workers who have suffered record unemployment due to a government-made drought," Spencer Pederson, spokesman for the majority side of the House Natural Resources Committee, said of the veto threat. "This bill is based on the bipartisan Bay-Delta Accord and the result of months of negotiations between California members who know what's best for California water, rather than Obama administration bureaucrats in Washington, D.C."

Republicans on the committee today released a statement showing support for the bill from groups including the National Taxpayers Union, Americans for Tax Reform, Citizens Against Government Waste, Americans for Limited Government, the U.S. Chamber of Commerce, the Agricultural Retailers Association, Supima Cotton, the Western Plant Health Association, the National Chicken Council and a number of California groups.

"We have long been aware that we do not have a water supply problem in California," said the Madera County, Calif., Farm Bureau in the Natural Resources Committee's statement. "What is occurring today is a water delivery problem. H.R. 1837 will aid in addressing deliver constraints."

The administration statement says Obama supports efforts "to provide a more reliable water supply for California and to protect, restore, and enhance the overall quality of the Bay-Delta environment" and has backed a federal plan to strengthen collaboration between federal agencies and California.

"Unfortunately, H.R. 1837 would undermine these efforts and the progress that has been made," the administration statement said. "For this reason, were the Congress to pass H.R. 1837, the President's senior advisors would recommend that he veto the bill."

From: Nelson, Damon

Sent: Wednesday, February 29, 2012 5:42 AM

To: Thomas Birmingham (tbirmingham@westlandswater.org); 'Bernhardt, David L.' (DBernhardt@BHFS.com)

Subject: FW: State Preemption on the floor today?

Attachments: California Water Law (Simplified) and the Sacramento-San Joaquin Valley Water Reliability Act.pdf

From: Nelson, Damon

Sent: Wednesday, February 29, 2012 7:40 AM

Subject: State Preemption on the floor today?

You will hear a lot of blustering from the Democrats today (who will seem to have a new found respect for State's Rights) about state preemption and State's Rights. They will claim that H.R. 1837 tramples on California's Constitution and state law.

What the Democrats will fail to mention are the FACTS – the inconvenient truth!

Attached is a document that will explain.

Also, the following organizations who are strong proponents of State's Rights have endorsed the bill.

Americans for Limited Government; National Taxpayers Union; Americans for Tax Reform; Citizens Against Government Waste; American Land Rights Association

Moreover, here is a list of State elected leaders who support the bill. If this bill violates State's Rights, then why would State elected leaders support the bill?

Senator Jean Fuller; Senator Bill Emmerson; Senator Anthony Cannella; Senator Joel Anderson; Senator Bob Huff; Senator Tom Berryhill; Senator Mimi Walters; Senator Tony Strickland; Senator Mark Wyland; Senator Bob Dutton; Senator Tom Harman; Senator Sharon Runner; Senator Ted Gaines; Senator Doug LaMalfa; Minority Leader Connie Conway; Assemblyman David Valadao; Assemblyman Jeff Miller; Assemblywoman Diane Harkey; Assemblywoman Shannon Grove; Assemblyman Jim Silva; Assemblyman Brian Jones; Assemblyman Cameron Smyth; Assemblyman Katcho Achadjian; Assemblyman Donald Wagner; Assemblyman Mike Morrell; Assemblyman Allan Mansoor; Assemblyman Brian Nestande; Assemblyman Steve Knight; Assemblywoman Linda Halderman; Assemblyman Paul Cook; Assemblyman Martin Garrick; Assemblyman Curt Hagman

Here is the entire list of support.

[http://nunes.house.gov/UploadedFiles/Support for the Sacramento-San Joaquin Valley Water Reliability Act.pdf](http://nunes.house.gov/UploadedFiles/Support%20for%20the%20Sacramento-San%20Joaquin%20Valley%20Water%20Reliability%20Act.pdf)

Damon Nelson
Deputy Chief of Staff & Legislative Director
Congressman Devin Nunes
Office: (202) 225-2523

Office Mission To ensure our constituents and all Americans live free and prosperous lives in a healthy and safe environment by serving, communicating, protecting and representing them in a professional and caring manner.



Devin Nunes App



App Store



Available on
Android Market



Sacramento-San Joaquin Valley Water Reliability Act

Prior Preemption of California Water Law

SUMMARY

At the invitation of the State of California, the Central Valley Project (CVP) was built by the Federal government nearly seven decades ago. At that time, the State of California relinquished its rights to any water produced by the federal project. Since 1986, at the request of the State of California and by federal law, the Central Valley Project and the State Water Project are required to operate in coordination with one another. Therefore, any action taken by the federal government will impact state operations and any action by the state will impact federal operations. This is not a state preemption – it is required coordination. Furthermore, the Bay-Delta Accord signed in 1994 by California Governor Pete Wilson and Clinton Administration Secretary of the Interior Bruce Babbitt outlines explicit operations for the Sacramento and San Joaquin Rivers Delta. State compliance with the Accord cannot be labeled federal preemption when California is simply being held to a previous agreement - one that had strong bipartisan support. Because the Central Valley Project and the State Water Project are unique and are not replicated anywhere else in the country, the actions prescribed in H.R. 1837 will not set a precedent that can be applied to other Reclamation projects.

Finally, H.R. 1837 is an exercise of Congress' rights under Section 1 & 5 of the Constitution's 14th Amendment to enact legislation to ensure that private property is not taken without due process. Water can be acquired by federal and state agencies for the benefit of fish, but it will have to be acquired in a manner consistent with the just compensation clause of the Constitution's 5th Amendment.

Historical Background

Some have expressed concerns with H.R. 1837 (Nunes, McCarthy and Denham) on the grounds that the legislation would preempt the application of state water and environmental law. These concerns ignore the history of preemption of California law as it applies to operations of the federal Central Valley Project (CVP) and the California State Water Project (SWP). H.R. 1837's preemption of California law recognizes this history of preemption so that all water users have a reliable water supply by protecting these property rights from federal and state regulators. As outlined below, H.R. 1837 is a response to a truly unique circumstance in the West. The bill, as amended, protects water users in northern and southern California and is the product of lengthy discussions between diverse water interests.

Unlike any other western water project, the CVP and SWP is a legally and operationally integrated operation. This unique circumstance was created to resolve uncertainty in the 1980's over whether the CVP or SWP would meet water quality standards in the Sacramento-San Joaquin Bay Delta. This uncertainty existed because it was the federal government's position that under California's





water rights priority system, the SWP had to meet water quality objectives before such conditions could be imposed on the CVP.

To avoid the potential implications of the application of these state water quality and priority of water rights laws to the SWP, the State of California proposed the sharing of obligations to meet such standards through the coordinated operations of the two projects. As a result, in 1986, Congress passed Public Law 99-546, which authorized the federal Interior Secretary to execute and implement the “Agreement Between the United States of America and the Department of Water Resources of the State of California for Coordinated Operations of the Central Valley Project and the State Water Project,” (“COA”). Although it is not expressed in terms of preemption, congressional approval of COA was in essence a preemption of California’s law as it pertains to the priority of state water rights because it integrated the two projects and their regulatory responsibilities into one.

The COA and Public Law 99-546 also form the basis for federal ESA preemption on the integrated CVP/SWP system. If COA did not exist, then the SWP would not be subject to the federal ESA’s biological opinions on fish species. However, as a result of COA, a single federal biological opinion now impacts both projects due to the fact they are integrated and operated as one unit. In this case, a federal law is superseding state law due to the State’s original preemption needs on COA and a subsequent congressional authorization.

The existence of COA has been used to justify the imposition by Congress of other obligations on the State of California. The Central Valley Project Improvement Act (CVPIA), Public Law 102- 575, which was authored by Representative George Miller (D-CA), is replete with such state preemptions. For example, CVPIA required 800,000 acre-feet of CVP yield to be used for fish and wildlife enhancement and specified quantities of water for wetlands for waterfowl habitat. These uses were not consistent with water rights appropriated pursuant to permits issued by the State Water Resources Control Board (SWRCB) under Water Code section 1700. However, these CVPIA actions (3406(b)(2) and 3406(d)) were interpreted by then-Deputy Interior Secretary John Garamendi to require the use of CVP water for these purposes even though the water right permits issued by the SWRCB did not authorize the use of water for those purposes.

The CVPIA also preempted flows on the Trinity River in northern California. Normally, minimum flow requirements for streams below a dam are established by the SWRCB using criteria established by state law. The CVPIA’s Section 3406(b)(23) ignored this process and these criteria. This provision prescribed specific minimum flow requirements (340,000 acre-feet) for the Trinity River, described a process for the Secretary of the Interior to confer with the Hoopa Valley Tribe concerning new minimum flow requirements for the Trinity River, and provided that “[i]f the Secretary and the Hoopa Valley Tribe concur in these recommendations, any increase to the minimum Trinity River instream fishery releases established under this paragraph and the operating criteria and procedures referred to in subparagraph (A) shall be implemented accordingly.” In other words, section 3406(b)(23) usurped the authority of the state to establish minimum flow requirements for the Trinity River by prescribing minimum flow and by giving that authority to the Secretary and the Hoopa tribe. Because the Secretary and the Hoopa tribe concurred on minimum flow requirements for the Trinity River, those flows must be released regardless of what the State of California thinks and regardless of what would have been done under state law.





There is a clear history of federal preemption over California water and environmental law. In one case, the State requested preemption (COA). In other cases, the very people (George Miller and John Garamendi) who are now opposing H.R. 1837 under the guise of state water rights have a repeated history of preempting state water law (COA and CVPIA). Even today, while they oppose the bill, they are cosponsors of H.R. 3398, the Klamath Basin Economic Restoration Act . This far-reaching bill codifies a settlement agreement that allows for pre-emption on California and Oregon water law. For example, the Klamath settlement being codified by H.R. 3398 will mean that Congress is telling the State of Oregon and California specifically how to allocate water (similar to the above Trinity example). If the two states ever wanted to change those allocations, they simply could not since congressional approval of the settlement pre-empted them from doing so.

The California water system is in a unique preemption circumstance. It is a unique system that is rife with preemptions thanks to prior congressional actions. There simply is not another situation in the West where, at the request of the state, the federal government and the state government are operating, in coordination, two major water projects to share responsibilities to meet environmental standards imposed under federal and state law. Nor is there another situation in the west where Congress has, without any apparent reservation, imposed obligations on the state government and preempted state law as it applies to a federal water project.

If Congress does not include the preemptions in H.R. 1837, only those water users who depend on the federal CVP would be protected from water shut-offs related to ESA and other laws. This protection, however, would force the federal government and the State to look for additional water sources to meet environmental water needs. Since the CVP/SWP are integrated, the first target would those who depend on the SWP. If the SWP is protected under the bill, then the regulators would then seek to take water from other water users, namely from areas-of-water-origin in northern California. As a result, H.R. 1837 protects water rights by prohibiting this from happening at the state level and recognizes the unique nature of an already preempted water system.



From: Nelson, Damon

Sent: Wednesday, February 29, 2012 6:46 AM

To: Thomas Birmingham (tbirmingham@westlandswater.org); 'Bernhardt, David L.' (DBernhardt@BHFS.com); Jason Peltier (jpeltier@westlandswater.org)

Subject: Orange County Record: by Rep. Ed Royce

Orange County Register

By ED ROYCE / Republican congressman representing Fullerton, other parts of North Orange County

"Human beings, as a species, have no more value than slugs."

— John Davis, editor, Earth First! Journal

While "mainstream" environmentalists may claim Mr. Davis does not represent them, actions taken in California on behalf of this movement increasingly resemble a world envisioned by Mr. Davis.

In just the past decade, millions of acres of land and trillions of gallons of water have been off-limits because of environmental mandates. Farmers have been prosecuted for disturbing the habitat of the Kangaroo rat, levees weren't maintained because doing so would harm the Elderberry Longhorn beetle, and a public hospital even had to be moved because of the presence of the Delhi Sands Flower-Loving fly. These fights, however troubling, pale in comparison to the most damaging offensive by the hard-core environmental movement, which came in defense of the Delta smelt, a three-inch fish.

Armed with powerful allies in Washington, those on the extreme end of the movement were able to severely restrict pumping throughout the California aqueduct system because, they claim, the pumps were depleting the smelt population. As is so often the case, the benefits were greatly oversold, and the costs were severely understated.

Despite claims by extremists, millions of dollars of research has shown numerous factors contributed to the decline in the smelt population, not simply the pumps. Additionally, the negative impact of slower pumps on California's economy was largely overlooked.

Northern California contains over two-thirds of the state's water resources and Southern California is home to two-thirds of the state's residents. As a result, millions of residents and thousands of farmers have long relied on this critical delivery system to meet their water demands. When the aqueduct pumps slowed under court orders and opinions issued by the Obama administration, devastation ensued. The worst of it hit in 2010. Over a million acre-feet of water were lost, thousands of jobs were destroyed, and hundreds of thousands of fertile acres were unnecessarily made fallow. The unemployment rates in some Central Valley towns reached toward 40 percent. Those signs along I-5 through the Central Valley told the story; "No Water = No jobs," "Food grows where water flows," and my personal favorite: "New Dust Bowl, Created by Congress."

Despite their powerful friends, the extremists were dealt a blow in late 2010, when a federal judge ruled that those ill-conceived biological opinions issued by the administration were unlawful and illogical. As a result, people who rely on the waterway have seen pumping restrictions eased.

While this was a step in the right direction, problems still exist, and no one knows where the Obama administration will go from here. Given recent history, one might bet it will err on the side of the smelt and against the interests of California.

However, legislation set to be considered by the House this week would bring some much-needed sanity back to this process. Rep. Devin Nunes' bill will ensure water access will not be restricted on the whims of the fringe environmental movement. By restoring water deliveries to the levels agreed upon in the 1994 Bay Delta Accords between California

and the federal government, this bill could create 30,000 jobs and save millions of acre-feet of water, which has been sent to the ocean because of overzealous environmental regulations.

However, this administration has proved willing to ignore Congress and bend the rules to appease its radical allies. The only guaranteed solution to the Delta smelt problem, as with so many other problems we face, is to ensure this president is retired in November.

FOLLOW US @OCRegLetters

From: Jason Peltier

Sent: Thursday, March 1, 2012 12:36 PM

To: Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: there are specific links to Fed CALFED funding here [past and present]

<http://www.usbr.gov/budget/>

From: Weaver, Kiel

Sent: Sunday, March 4, 2012 11:46 AM

To: Birmingham, Thomas (tbirmingham@westlandswater.org); dbernhardt@bhfs.com

Subject: Thanks

It's a sad commentary when it takes me almost five days to give you both the proper thanks for helping us out with H.R. 1837 (I had to shift gears rapidly to get ready for this week's controversial floor bill -- the Tipton hydropower bill).

I cannot emphasize enough how valuable you guys were in terms of understanding the provisions, battling those who were against the provisions and shoring up those who should be for the bill. Movement of the bill was a significant milestone in terms of bringing some sanity back to California water and the federal folks who made it so insane and unworkable in the first place.

So, thanks. I'm sure we will continue our work together in the next few weeks, months and years.

From: Jason Peltier

Sent: Monday, March 12, 2012 10:50 AM

To: 'T Birmingham (tbirmingham@westlandswater.org)'; 'Allison Dvorak Febbo'; 'Ara Azhderian'; 'B Walthall'; 'BJ Miller'; 'Brenda Burman'; 'Byron Buck'; 'Carolyn Jensen'; 'Chris Beale'; 'Clare Foley'; 'Cliff Schulz'; 'Curtis Creel'; 'D Nelson'; 'Dan Keppen'; 'David Bernhardt'; 'Ed Manning'; frances.mizuno@sldmwa.org; 'Gayle Holman'; 'Greg Zlotnick'; 'Joe Findaro'; 'Jon Rubin'; 'Kear,Adam C'; 'Laura King Moon'; 'Laura Simonek'; 'LLoyd Fryer'; 'Martin McIntyre'; 'Mike Henry'; 'Mike Wade'; 'Neudeck,Randall D'; 'Philp,Thomas S'; 'Rodriguez, Larry'; 'Roger Patterson'; 'Rose Schlueter'; 'Sheila Greene'; 'Steve Arakawa'; 'Sue Ramos'; 'Terry Erlewine'; 'Tom Boardman'; 'Tom Glover'; 'Tom Mongan'; 'Valerie Connor'

Subject: More Fun

A testimonial from Sockton's new lobbyist:

"Hopcraft Communications is an essential component of a successful strategy to effect political change on issues and laws in the state of California."—
Donne Brownsey, Senior Vice President, Sacramento Advocates

From: Jason Peltier [mailto:jpeltier@westlandswater.org]

Sent: Monday, March 12, 2012 10:44 AM

To: 'T Birmingham (tbirmingham@westlandswater.org)'; 'Allison Dvorak Febbo'; 'Ara Azhderian'; 'B Walthall'; 'BJ Miller'; 'Brenda Burman'; 'Byron Buck'; 'Carolyn Jensen'; 'Chris Beale'; 'Clare Foley'; 'Cliff Schulz'; 'Curtis Creel'; 'D Nelson'; 'Dan Keppen'; 'David Bernhardt'; 'Ed Manning'; frances.mizuno@sldmwa.org; 'Gayle Holman'; 'Greg Zlotnick'; 'Joe Findaro'; 'Jon Rubin'; 'Kear,Adam C'; 'Laura King Moon'; Jason Peltier; 'Laura Simonek'; 'LLoyd Fryer'; 'Martin McIntyre'; 'Mike Henry'; 'Mike Wade'; 'Neudeck,Randall D'; 'Philp,Thomas S'; 'Rodriguez, Larry'; 'Roger Patterson'; 'Rose Schlueter'; 'Sheila Greene'; 'Steve Arakawa'; 'Sue Ramos'; 'Terry Erlewine'; 'Tom Boardman'; 'Tom Glover'; 'Tom Mongan'; 'Valerie Connor'

Subject: RE: truly sad that their strongest argument is rhetoric rooted in bigotry toward those who live, work and farm on the Westside.

Info on their press contact fella:



About Us

Steve Hopcraft grew up in Rhode Island in the sixties, inspired by civil rights and antiwar leaders, he helped organize protests during high school and at the University of Rhode Island (URI).

After graduating from URI, and spending a year in postgraduate study at the University of Maryland, Steve moved to Berkeley in 1973, helping to lead a successful two-year rent strike. Steve left Berkeley for the Central Valley in August 1975, intending to spend a couple of weeks working on the United Farm Worker's first-ever farmworkers' union representation elections. Instead, Steve spent more than two years there, learning to speak Spanish in the fields while working as a bilingual paralegal and organizer. The growers and the Teamsters Union actively, sometimes violently, opposed the UFW, firing and harassing workers, and intimidating union leaders and staff. Steve later became Regional Director for the UFW's statewide Proposition 14 campaign.

In 1977, Steve left the UFW for Sacramento and a position as a supervisor of California community organizers for the U.S. government's Volunteers in Service to America (VISTA) program. In 1978, Steve became legislative representative for CHAIN, California's tenants' rights group, helping lead post-Prop. 13 rent control and tenants' protection campaigns. Steve was elected CHAIN's president, and in 1980, while being vastly outspent, co-managed a landmark ballot measure campaign, defeating a landlord-sponsored repeal of local rent controls.

In 1982, Steve took a position in the State Capitol as press aide to Leo McCarthy, who was elected lieutenant governor that year. As Lieutenant Governor McCarthy's press secretary, Steve worked with the statewide media on issues and elections, including the 1988 presidential race where Steve served as the California Press Secretary during the presidential and senatorial elections.



During this time, Steve earned a Masters Degree in Communications Studies at Sacramento State, studying the theoretical basis for his advocacy work.

Following the 1988 election, Steve founded Stephen K. Hopcraft Communications Consulting. Hopcraft Communications principally serves nonprofit and public interest organizations, including labor unions, and state ballot measures, and public education campaigns.

Our Mission

Our mission has been to do good things, with good people and have a good time doing it. Our first client was the Oceanic Society, an ocean-conservation organization. In twenty years Hopcraft Communications has helped dozens of progressive policy efforts and nonprofit groups. We bring experience and enthusiasm to our progressive issues advocacy. We've earned a reputation for dedicated, creative work. A California political newsletter wrote that the media cover Hopcraft's clients "in self-defense" – due to our dogged persistence in seeking media coverage and public support.

Raised on student protests, trained by the farmworkers' union's best organizers, and working for thirty years on California campaigns, Steve brings a diverse arsenal of skills to his clients' communications challenges. Let Hopcraft Communications give voice to your cause.

From: Jason Peltier [<mailto:jpeltier@westlandswater.org>]

Sent: Monday, March 12, 2012 10:38 AM

To: T Birmingham (tbirmingham@westlandswater.org); Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLOYD Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: truly sad that their strongest argument is rhetoric rooted in bigotry toward those who live, work and farm on the Westside.

Members of Delta Coalition discuss their opposition to "any peripheral canal or tunnel" sending Sacramento-San Joaquin Delta water "directly to corporate agribusiness," say urban water districts are "working hard to conserve" while "top 1%" of "agribusiness has its eyes fixed on draining the Delta." 8:30 a.m., Outside Rm. 112. Contact: Steve Hopcraft 916 956 4592.

Listed speakers: Stockton Mayor Ann Johnston; Barbara Barrigan-Parilla, Restore the Delta.

Source: Today's Capitol Morning Report

From: Jason Peltier

Sent: Friday, March 23, 2012 9:21 AM

To: Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: NRC next week



[Michael E. Campana@WaterWired](#)

NRC B-D report: released to public @ 1 PM EDT, 29 March. I plan to post copy on WaterWired blog then.
<http://is.gd/bDfTDN> [#sacdelta](#)

From: Jason Peltier

Sent: Monday, March 26, 2012 11:50 AM

To: Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: Salmon fishermen attack CVPIA Restoration Fund decisions.

Attachments: CVPIA Restoration 3.22.2012.pdf

Good for them.



"The New Voice of Salmon"
1370 Auto Center Drive
Petaluma, CA 94952
(855) 251-4478

March 22, 2012

Mr. Dan Castleberry
Assistant Regional Manager - Fisheries
U.S Fish and Wildlife Service
2800 Cottage Way W2606
Sacramento, CA 95825

Mr. Don Glaser
Regional Director
Mid Pacific Region
U.S Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825-1898

Dear Dan and Don:

On March 15th the Golden Gate Salmon Association (GGSA) participated in the public review of the CVPIA work plan for 2012. We have some serious concerns about that plan. This letter will provide our comments.

The GGSA is a strong supporter of the CVPIA legislation and the Restoration Plan. When Congress passed this legislation in 1992 they set some strong programs into motion to protect and enhance wildlife. Objectives were set for the rebuilding of the salmon populations along with protections for waterfowl and other species. The responsibility for executing the plan was given to the Secretary of Interior and a Restoration Fund was funded to provide the financial support for the recovery actions. The responsibility for preparing and executing the plan was subsequently passed onto the U.S. Bureau of Reclamation and the U.S. Fish and Wildlife Service.

Parts of the plan have worked well and parts of it have failed miserably. Waterfowl populations have doubled and tripled based on the program but salmon populations have

crashed to record lows with very few actions underway that will reverse these trends. The Restoration Plan has spent \$50 million a year for the past 20 years but has failed to stop the salmon declines and achieve the targeted results.

GGSA concludes that the 2012 Restoration work plans that have been prepared by USFWS and USBR are not really plans. They are simply a collection of hundreds of projects that have been proposed by field offices of the two agencies. Many of these projects are well conceived by capable and dedicated staffs and will provide some benefits to salmon at some point. What is missing is management oversight to see that the plans that are proposed and accepted are focused on the reasons the salmon runs have declined and are focused on the best investments to begin the early rebuilding process. Each project in the current plan has a goal or step to complete but there is no connection or analysis made to see if that project in fact contributes to a near term overall net gain in salmon production. Many of the projects take place in the tributaries but there is no analysis made of whether or not additional enhancements in a tributary will in fact produce additional smolts to the ocean at an early date and adults to return three years later. On the San Joaquin side, smolt losses in the South Delta are near 100%. Hundreds of thousands of additional smolts would have to be produced in the tributaries to have any true net impact on an increase in San Joaquin populations. The plan ignores this kind of analysis in its San Joaquin expenditures. The same kinds of problems exist on the Sacramento side. In some instances, up to 90% of the smolts perish on their way down the river or in the Delta. All of this suggests that there is no overall strategic analysis going into the plan to determine where the best early opportunities lie for spending Restoration funds. GGSA believes this kind of analysis would focus much more current attention in the rivers and the Delta rather than on some of the upstream projects. Upstream projects that can produce large numbers of additional smolts or endangered fish at early dates should be funded but marginal or distant future upstream projects should not be funded and more of the current funds should be funneled to the serious downstream problems. GGSA believes the bottom line of all of this is that a lot of money is being spent in the wrong places and additional salmon are not being produced. We hope to help you change this.

If one looks only at the proposed projects in the plan they all look positive and worthy of support. However, if one attempts to relate those plans to the places where salmon are currently lost and need early recovery, the link becomes very difficult or impossible.

The 2012 plan and those of recent years have no stated overall net goals in terms of additional salmon production and no supporting information of how those goals will be achieved. You cannot have a plan unless you have stated goals and specific measurable, achievable, relevant and time bound (smart) objectives that define attainment of those

goals.

Last year, GGSA analyzed the 2011 Restoration Plan and we were very disappointed. Out of \$48.4 million of Restoration Plan spending, we only found \$3.7 million in salmon projects we felt would make a short term difference in the populations. Most of the non-waterfowl money was being spent on overhead, field monitoring and studies. At that time in a letter to Mr. Don Glaser GGSA said,

“We do not believe the Restoration Plan in its current mode of operation has a prayer of doubling or even restoring the salmon populations”

We attribute this same statement to the 2012 Restoration Plan. We see no evidence of structural changes in the plan.

GGSA is examining the declines of the salmon runs and the reasons for those declines. We now have two top river and Delta scientists helping us. High on our list of contributing problems are: (1) Delta entrainment and the smolt mortality from Delta predation and fatalities at the pumps. (2) High mortality in the mid Sacramento River caused by flow problems and lack of protective cover for juveniles. (3) Significant drops in Upper Sacramento River spawning and rearing success caused by inadequate gravel and high temperature water released from Shasta/Keswick. (4) Large drops in American River spawning and rearing success caused by temperature and flow problems. We could name many more problems but our point here is that we see almost nothing in the Restoration Plan that will address these severe conditions.

The Restoration planning system is badly broken and needs a major overhaul if it is to accomplish the objectives set out by Congress. Most of \$50 million a year is currently unproductive in rebuilding the runs and this needs to stop. By one mechanism or another, we believe the planning process must be opened up to much broader analysis and participation to see that the projects lead to real and early solutions to the current salmon losses. We suggest that some sort of oversight or planning group should be commissioned to plan and review the projects that go into the plan. We would prefer to see this created by the local USFWS and USBR agencies but if it can't be done here, we should ask the Secretary of Interior or Congress to intervene. Following are some of the steps we feel are necessary.

- The California Department of Fish and Game and the National Marine Fisheries Service should be fully engaged in the process and provide formal comments and recommendations before a plan is adopted.
- One or more independent science panels should review the plan and provide

analysis of the magnitude of effects and likelihood that its actions will contribute to early rebuilding of the salmon runs.

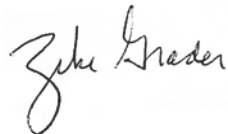
- Salmon stakeholder groups should participate in the planning process and provide comments and recommendations.
- NGOs, public agencies and other interested parties should be provided the opportunity to comment.

We appreciate the opportunity to submit our views. Please take our comments as a constructive effort. We highly value our relationship with both the Bureau and the Service. We look forward to continuing to work with you on these very difficult salmon problems.

Yours Truly.



Dick Pool
Secretary, GGSA
CVPIA Analyst



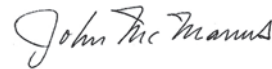
Zeke Grader
Vice President
GGSA, Executive
Director PCFFA



Roger Thomas
Chairman GGSA
President Golden
Gate Fishermen's
Association



Victor Gonella
President GGSA
& President
of Victory Motors



John Mc Manus
Executive Committee
GGSA, Director of
Communications

- cc. Honorable Grace Napolitano – Minority, Sub Committee Water and Power
Mr. Mike Connor - USBR
Mr. David Nawi - DOI
Mr. Chuck Bonham –DFG
Mr. Rod McInnis – NMFS
Mr. Ren Lohoefer - USFWS
Mr. Randy Record - Association of Calif. Water Agencies
Mr. John DiStasio– California Municipal Utilities Assn.

From: Jason Peltier

Sent: Wednesday, March 28, 2012 4:18 PM

To: T Birmingham (tbirmingham@westlandswater. org); Joe Findaro; David Bernhardt; Tony Coelho; Ed Manning; Carolyn Jensen (cjensen@ka-pow. com)

Subject: FYI

The latest on California politics and government

March 28, 2012

[GOP sees four Democrat-held Cal congressional seats as winnable](#)

A new appraisal by the [National Republican Congressional Committee](#) claims that state-by-state redistricting has enhanced GOP chances of retaining control of [Congress](#) by making 16 seats held by Democrats vulnerable, including four in [California](#).

The NRCC memo written by its executive director, [Guy Harrison](#), was revealed in a National Journal [article](#) Wednesday.

The memo says that Democrats [Lois Capps](#) of [Santa Barbara](#), [Jim Costa](#) of Fresno and [John Garamendi](#) of [Walnut Grove](#) are potentially vulnerable. It also lists the vacant [21st Congressional District](#) in the lower [San Joaquin Valley](#) as winnable by a Republican. Costa would have been the 21st District incumbent, but opted to move into the 16th District after Democratic Congressman Dennis Cardoza decided to retire.

The memo did not, however, list the 26th Congressional District in Southern California, which has been widely seen as a potential battleground, as a target.

That appraisal comports with the general views of most political oddsmakers, but there's also a consensus that Democrats will see a net gain in California congressional seats as a result of the redistricting by an independent commission because a number of GOP congressmen are retiring.

Moreover, at least two Republican congressmen, Dan Lungren in suburban Sacramento and Jeff Denham in the upper San Joaquin Valley, are considered to be as vulnerable as the Democrats Harrison lists.

Harrison's memo says that redistricting, which is done by legislatures in most states, made 14 Republican-held seats more competitive. He cited changes in Ohio, Pennsylvania and Virginia as being particularly favorable to Republicans. Democrats must pick up 25 seats to retake control of the House.

Categories: [Congress](#), [Election 2012](#)

Posted by [Dan Walters](#)

[The Sacramento Bee](#)

2:44 PM 2:44 PM | [30 Comments](#) | [Share](#)

Read more here: <http://blogs.sacbee.com/capitolalertlatest/2012/03/gop-sees-four-democrat-held-cal-congressional-seats-as-winnable.html#storylink=cpy>

From: Walthall, Brent
Sent: Thursday, March 29, 2012 9:48 AM
To: Mike Wade
CC: Jason Peltier; Martin McIntyre
Subject: Re: Exec Summary NAS Report

I'd like to propose that we invite one urban rep to listen in with us: Tom Philp from MWD. What do you think?

Brent

On Mar 29, 2012, at 9:45 AM, "Mike Wade" <mwade@farmwater.org> wrote:

NAS media call set for 10 am. Weâ€™re trying to get it set up so you can listen in.

Call our conference line a few minutes before 10 at (712) [REDACTED] Access Code: [REDACTED] and hopefully weâ€™ll have things connected.

On 3/29/12 9:27 AM, "Jason Peltier" <jpeltier@westlandswater.org> wrote:

Ok but I am out in the delta most all of the dayâ€¦

Mike, could you make sure Martin gets it if you see it?

From: Martin McIntyre [<mailto:mcintyre.martin@gmail.com>]
Sent: Thursday, March 29, 2012 9:24 AM
To: Jason Peltier
Subject: Re: Exec Summary NAS Report

Would like to see the entire report when available. In the summary they seem to continue to under emphasize predation of salmonids.

On Wed, Mar 28, 2012 at 10:23 PM, Jason Peltier <jpeltier@westlandswater.org> wrote:

Begin forwarded message:

From: "Jason Peltier" <jpeltier@westlandswater.org>
To: "Fiona Hutton" <fhutton@fionahuttonassoc.com>, "Ann Newton" <anewton@fionahuttonassoc.com>, "Allison Dvorak Febbo" <AFebbo@swc.org>, "Ara Azhderian" <Ara.Azhderian@sldmwa.org>, "B Walthall" <bwalthall@kcwa.com>, "BJ Miller" <bjmiller41@gmail.com>, "Brenda Burman" <bburman@mwdh2o.com>, "Byron Buck" <BBuck@sfcwa.org>, "Carolyn Jensen" <cjensen@ka-pow.com>, "Chris Beale" <CBeale@resourceslawgroup.com>, "Clare Foley" <cfoley@farmwater.org>, "Cliff Schulz" <cschulz@kmtg.com>,

"Curtis Creel" <ccreel@kcwa.com>, "D Nelson"
<Dan.Nelson@sldmwa.org>, "Dan Keppen"
<dankeppen@charter.net>, "David Bernhardt"
<DBernhardt@BHFS.com>, "Ed Manning" <emanning@kapow.com>, "frances.mizuno@sldmwa.org"
<frances.mizuno@sldmwa.org>, "Gayle Holman"
<gholman@westlandswater.org>, "Greg Zlotnick"
<[REDACTED]>, "Jason Peltier"
<jpeltier@westlandswater.org>, "Joe Findaro"
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<jon.rubin@sldmwa.org>, "Kear,Adam C"
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"Laura Simonek" <lsimonek@mw2dh.com>, "LLoyd Fryer"
<lfryer@l-squared.com>, "Martin McIntyre"
<[REDACTED]>, "Mike Henry"
<mhenry@farmwater.org>, "Mike Wade"
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<rneudeck@mw2dh.com>, "Philp,Thomas S"
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<lrodriguez@kcwa.com>, "Roger Patterson"
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<sarakawa@mw2dh.com>, "Sue Ramos"
<sramos@westlandswater.org>, "Terry Erlewine"
<terlewine@swc.org>, "Tom Boardman" <tboardman@apex.net>,
"Tom Glover" <tglover@westlandswater.org>, "Tom Mongan"
<[REDACTED]>, "Valerie Connor"
<vconnor@sfcwa.org>

Subject: FW: Exec Summary NAS Report

FYI, attached, attached is the recently released NAS report executive summary.

Sent from my iPad

Food Grows Where Water Flows

Mike Wade
California Farm Water Coalition
6133 Freeport Boulevard, 2nd Floor
Sacramento, CA 95822
(916) 391-5030 <tel:%28916%29%20391-5030>
(916) 391-5044 <tel:%28916%29%20391-5044> FAX

www.farmwater.org <<http://www.farmwater.org>>
www.facebook.com/calfarmwater
<<http://www.facebook.com/calfarmwater>>
www.twitter.com/farmwater <<http://www.twitter.com/farmwater>>

From: Jason Peltier

Sent: Saturday, March 31, 2012 8:52 AM

To: T Birmingham; Joe Findaro; David Bernhardt; Ed Manning; Carolyn Jensen (cjensen@ka-pow. com)

Subject: FYI

ACWA Committee Discusses H.R. 1837, Forms Work Group to Develop Ideas

Submitted by Lisa Lien-Mager on Fri, 03/30/2012 - 12:33pm

ACWA's Federal Affairs Committee voted March 29 to maintain a "watch" position on H.R. 1837 and form a work group to develop constructive ideas for addressing Endangered Species Act implementation issues.

H.R. 1837, the Sacramento-San Joaquin Valley Water Reliability Act, was approved by the House of Representatives on Feb. 29.

Authored by Rep. Devin Nunes (R-21) and co-sponsored by Rep. Jeff Denham (R-19) and Majority Whip Kevin McCarthy (R-22), the bill would make far-reaching changes to California water policy.

Though it has been amended since its initial introduction, the bill remains controversial with ACWA's membership. The decision by the Federal Affairs Committee to maintain a "watch" position but engage on the issue reflects ACWA's strong interest in promoting ways to improve the way the ESA is being implemented, ACWA President Randy Record said.

"The recent debate in Congress revealed sharp differences over how to address our state's long-term water problems," Record said.

"Those problems are complex, but one of the key issues is that ESA is not working. There is a constructive role for ACWA to play by engaging in the process and providing specific ideas on how to better administer the ESA."

The committee will convene a work group of members to develop ideas for actions that might be taken on a bipartisan basis to provide assistance to local water agencies and others working to comply with requirements of the ESA while maintaining water deliveries to cities, farms and businesses.

ACWA's Board of Directors has adopted [policy principles](#) on ESA implementation that call for a comprehensive, ecosystem-based approach that recognizes the co-equal goals of water supply reliability and ecosystem health and utilizes a much more diverse set of management tools.

From: Jason Peltier

Sent: Friday, April 6, 2012 9:21 AM

To: T Birmingham; Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: NRC Report summary from Coalition for a Sustainable Delta



- [Home](#)

National Research Council Releases Report on the Delta Crisis

Summary of Natural Research Council Report *“Sustainable Water and Environmental Management in the California Bay-Delta”*

The National Research Council’s Committee on Sustainable Water and Environmental Management in the California Bay-Delta released its second and final report in pre-publication form on March 29, 2012. The report, titled *Sustainable Water and Environmental Management in the California Bay-Delta*, is 220 pages long, including a summary and five chapters. Below is a brief summary of the key takeaways.

The Committee was tasked to do the following in the report:

- Identify the factors that may be contributing to the decline of federally listed species and, as appropriate, other significant at-risk species in the Delta. To the extent practicable, rank the factors contributing to the decline of salmon, steelhead, delta smelt, and green sturgeon in order of their likely impact on the survival and recovery of the species, for the purpose of informing future conservation actions.
- Identify future water-supply and delivery options that reflect proper consideration of climate change and compatibility with objectives of maintaining a sustainable Bay-Delta ecosystem.
- Identify gaps in available scientific information and uncertainties that constrain an ability to identify the factors described above.
- Advise, based on scientific information and experience elsewhere, what degree of restoration of the Delta system is likely to be attainable, given adequate resources. Identify metrics that can be used by resource managers to measure progress toward restoration goals.

The main points of the report are as follows:

- **Society is reluctant to confront a number of crucial facts**, including the facts that: water is scarce; many environmental changes have occurred in the Delta; governments are pursuing independent and

conflicting objectives; and there is inherent uncertainty linked to an inability to accomplish comprehensive planning.

- **Water scarcity and uncertainty regarding the implementation of the co-equal goals of water supply reliability and ecosystem protection in the Delta are going to continue to be a major challenge**, and as such, the authors propose a set of principles for water planning:
 - Recognize that not all uses of water are always compatible with each other.
 - Provide better definition of competing uses; and acknowledge, specify, and account for trade-offs in planning and decision making.
 - Modify practices that do not reflect the scarcity value of water.
 - Enforce California's constitutional prohibition against non-beneficial, unreasonable, and wasteful water use.
 - Protect values recognized under the public trust doctrine.
 - Practice water conservation.
 - Improve groundwater monitoring and regulation in all sectors.
 - Consider using water markets to address scarcity.
- **The report acknowledges that there is a suite of stressors affecting species and processes in the ecosystem in complex and interactive ways:** "Only a synthetic, integrated, analytical approach to understanding the effects of suites of environmental factors on the ecosystem and its components is likely to provide important and useful insights that can lead to enhancement of the Delta ecosystem and its species."
- **The authors fail to engage in any ranking or prioritization of stressors** because of the difficulty of doing so; this is similar to the response of the Delta Stewardship Council Independent Science Board when it was asked by the State Legislature to rank Delta stressors.
- With respect to Chinook salmon steelhead, the authors conclude that "[a]ltering pump operations or providing an alternative water conveyance system will do little to offset the dramatic effects of habitat loss and deficiencies in existing population structure," identifying the loss of 80 percent of historical habitat as a fundamental constraint on the species.
- With respect to the decline of delta smelt, the authors conclude that "[a]ll of the analyses agree that water temperature, summer-fall habitat related to salinity and water clarity, and food are important, and there is some evidence for the importance of entrainment and predators." Notably, the authors repeatedly emphasize the fact that multiple stressors have contributed to the current status of delta smelt and thereby reject the simplistic belief that entrainment is to blame.
- **Climate change and levee failure pose significant challenges in the Delta and human-induced changes to the Bay-Delta to date will not allow the return to historical conditions:** "Resource managers dealing with the Delta will need to determine the degree of 'restoration' achievable through intervention and adaptation. There is agreement that the Delta as it existed before large-scale alteration by humans cannot be recreated." Therefore, the authors focus on guiding the ecosystem toward desirable states, as opposed to large-scale restoration to some past condition.
- **Fragmented governance is a major challenge to addressing the ecosystem and water supply issues in the Delta.** To be effective, planning must also encompass upstream watersheds.
- **Institutional reform should be implemented as a facet of the overall effort to address water and environmental management in the Delta.** The authors contend that water management in the Delta has been reactive and singular rather than proactive and comprehensive, which is a fair criticism of past efforts, although the Bay Delta Conservation Plan is clearly an attempt to be more proactive and

comprehensive in order to address the Delta's challenges. **Unfortunaetly, there is a failure in the report to identify the federal and state governments as the entities with principle responsibility for the current state of affairs.** The federal government, in particular, has, through its conduct, eroded trust by creating barriers to collaboration to address the Delta's challenges.

The Committee noted that it was not specifically asked for policy, political or legal advice, and thus was focused on science, although the Committee did wade into discussion of policy issues throughout the report. The report does not address the benefits and advantages of isolated conveyance, nor make any specific recommendations with regard to improved conveyance in the Delta because, in the Committee's view, there was insufficient information available to undertake any such analysis. However, the Committee does recommend that any such decision regarding construction and design of an alternative conveyance system be made within the context of an integrated plan for the Delta.

From: Jason Peltier

Sent: Wednesday, April 18, 2012 9:12 AM

To: T Birmingham; Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: Just To Ruin Your Day

If we took all the garbage like this as THE WORD, certainly we would go insane. None the less, this looks like the Master Hit list that we see woven thru the words and thoughts of our “perfect world” critics:

Tina Swanson's Blog

California's Bay Delta Conservation Plan Has No Clothes

Print this page



Posted April 17, 2012

Remember the story of [the emperor's new clothes](#)? Two tailors promise the emperor a magnificent suit of clothes made of fabric that is invisible to those who are unworthy of their positions. The emperor, who can't see the fabric himself but doesn't want to admit it, parades before his subjects. The crowd plays along with the pretence, unwilling to speak out, until a child blurts out the truth—the emperor is wearing nothing at all!

The parallels between this fable and the current collision of science and policy in California's iconic San Francisco Bay-Delta are disturbing. At issue, development of the [Bay Delta Conservation Plan](#), intended to rescue the estuary's collapsing ecosystem, prevent extinction of half a dozen fish species (including salmon) and improve the reliability of water supplies pumped from Delta channels to farms and cities. The result of this five-year, \$140 million effort is a [draft plan](#) that, according to its own “effects analysis,” would make the existing situation worse by further degrading estuarine habitat, harming most of the fish species it is supposed to help and increasing water diversions from this already over-tapped system.

How could BDCP reach this point, when the Bay-Delta is one of the best studied estuaries in the world? Even in this contentious system, there is no disagreement that many factors have contributed to the ecosystem's decline. Here are the major problems, the BDCP's preliminary proposed actions to address them and a summary of what the best current science says about the likely effectiveness of those actions.

Freshwater inflow and water management: Like all estuaries, the Bay-Delta is dependent on the inflow of fresh water. For many Bay-Delta fish and invertebrate species, higher inflows result in higher abundance levels: this is the strongest scientific relationship we have between

any environmental variable and biological response in this ecosystem. But water diversions, which reduce flows, have been increasing for the past several decades. In the 2000s, diversions from the Delta reached record high levels, effectively [leaving the estuary in chronic drought conditions](#). The resultant [degraded habitat](#) and [mortality of fish at the Delta pumps](#) contributed to dramatic fish declines, leading to court-ordered reductions in pumping and prompting [California's State Water Resources Control Board](#) to conclude that current levels of freshwater inflow are insufficient to protect public trust resources in the Bay-Delta. But one of BDCP's preliminary proposed "conservation measures" is to build a new "isolated conveyance" facility (previously known as the peripheral canal) with a new diversion in the northern Delta, and to increase the amount of water exported from the Delta by an average of 20 percent. This increased pumping would further reduce freshwater flows to the estuary, which, according to decades of science, will worsen estuarine ecosystem conditions and reduce species abundance. A new conveyance facility is neither inherently beneficial nor inherently harmful to the ecosystem—its impacts or benefits depend on how it would be operated. But, the current proposal to increase diversions would clearly harm the estuary and Bay-Delta fish species.

Habitat: Most of the Delta's tidal marshes and floodplains were [lost a century ago when levees were constructed and wetlands drained to create farmland](#). Loss of these productive habitats undoubtedly had significant negative impacts on the ecosystem back then but it is unlikely that this is a major cause of recent ecosystem or species declines. Restoration may be desirable for a number of reasons (and, particularly [floodplain restoration](#) may provide ecological benefits), but there is little scientific evidence that tidal marsh restoration will contribute to recovery for most of the endangered fish species. [This study of Bay-Delta tidal marshes](#) reported that there was a "high degree of uncertainty" that restoration would benefit Bay-Delta fishes and [this study](#) warned that restored tidal marshes were likely to be invaded by harmful invasive plants and fishes, which would minimize (or eliminate) benefits for native species targeted for recovery. Despite this, the BDCP relies heavily on restoration of tidal wetland habitat and, to justify these actions, [cites and misrepresents](#) some of these same studies to claim that these conservation measures "may contribute significantly" to the food web and benefit species.

Water Quality: Delta waters are listed under the Clean Water Act as "[impaired](#)" for a number of pollutants and [studies](#) indicate that toxic contaminants and toxic algae blooms may be a contributing factor for species' declines. BDCP's conservation measures to address this problem are to provide funding for a few already-required pollution mitigation programs and to conduct limited monitoring in some areas. Meanwhile, other BDCP actions that reduce flows would likely [exacerbate blooms of toxic algae](#), which occur under low flow conditions.

Food supply: Some twenty years ago, the abundance of the planktonic plants and animals that are important components of the Bay-Delta's food web declined dramatically, the victim of the [invasive overbite clam](#) and [ammonium pollution](#) from agricultural drainage and sewage treatment plants, according to scientific research. Food limitation has been identified as a [contributor to the recent fish declines](#). BDCP proposes to address this problem by restoring tidal marsh and floodplain habitats, claiming (with little scientific support) that these restored habitats will produce plankton and increase the estuarine food supply. But, even assuming that part of the plan does work, BDCP's plans to further reduce flows would likely improve habitat conditions for the clam and reduce dilution of ammonium pollution, exacerbating the

principal causes of low planktonic food supplies in the Bay-Delta. And, since most of BDCP's proposed restoration projects would not be implemented for at least 20 years, the plan offers little to address this immediate problem.

Invasive species: In the Bay-Delta, invasive species are both a cause and a symptom of the degraded ecosystem. The most harmful species—the overbite clam, Brazilian waterweed and predatory warm-water fishes—thrive in stable, low flow conditions like those that now regularly occur because of excessive water diversions. Invasive species are notoriously difficult to get rid of, particularly when environmental conditions are favorable for them: there is little evidence that chemical or physical removal control programs either reduce their abundance or improve ecosystem conditions. Nevertheless, BDCP's approach to this problem is to fund a few localized programs to try to suppress Brazilian water weed and predatory fish populations (but not the clam). Meanwhile, BDCP's plans for reduced flows and (possibly risky) tidal marsh restoration projects could worsen the Bay-Delta's invasive species problem.

From my perspective as a scientist who has conducted research and worked on policy development in the Bay-Delta for the past 20 years, the mismatch between what the science tells us about this ecosystem and what the BDCP currently proposes for its conservation plan is ... astonishing.

But from a more jaded perspective, I suppose it's understandable how it came to this—and an illustrative example of the dangers of disproportionately empowering some special interests in the development of a public resource management plan. The [Delta export water contractors](#), (the tailors in our fable) who have played a dominant role in the development of the BDCP, have developed a set of seemingly impressive, but likely ineffective, conservation measures (the emperor's invisible suit). Unlike the fable, however, the crowd has not been silent: reviews by scientists from government agencies, [stakeholder groups](#), the [Delta Science Program](#) and the [National Academy of Sciences](#) have been uniformly critical.

The BDCP is an important and ambitious effort to manage a complex ecosystem to balance environmental and human needs, but it's hard to imagine that it can succeed without fundamental changes to its [use of science to develop an effective plan](#). To protect the Bay-Delta and sustainably manage California's water resources—and to avoid further embarrassment—it's time for the BDCP to put some scientific clothes on.

NRDC Science Center intern Catherine Corrigan-Ashe contributed to this post.

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Comments ([Add yours](#))

Deirdre Des Jardins — Apr 18 2012 01:32 AM

A thorough and excellent analysis.

Wanted to add that the proposed extensive BDCP habitat restoration program is a part of the 138,000 to 191,000 acre habitat restoration that was promised as part of the 2000 CALFED Record of Decision, and that the export water contractors refused to fund when it ran through most of its bond money.

CALFED's "30 year, comprehensive management plan for the Delta" only lasted about five years -- until all of the proposed conveyance projects were built. When it came time to actually re-evaluate the plan, and if it was meeting the ecosystem and water quality goals, the legislature and the export contractors decided it was "too expensive."

Given that the export contractors have made no commitments to funding habitat BDCP habitat restoration, it seems likely that those plans will see the same fate, particularly in light of the upwards of \$30 billion price tag.

From: Jason Peltier

Sent: Tuesday, May 8, 2012 10:53 AM

To: Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLOYD Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: lessons

Fired scientist says Klamath dam removal 'extreme'

By TIM HEARDEN

Capital Press

YREKA, Calif. - The former U.S. Bureau of Reclamation senior science adviser who claims he was fired in February for speaking out about the Klamath River dam removal process said removing the dams should be an "extreme" last resort.

Paul Houser told about 200 people here May 7 that removing the four dams from the river is "an uncontrolled experiment" with impacts such as poor water quality that could have dire consequences for fisheries.

He said much further study is needed of alternatives such as fish passage, adding that scientists should truck in fish above the dams to see if they can find suitable habitat.

"We don't know what would happen if we did nothing, so for me, taking the dams out is the most extreme option," said Houser, 41, a George Mason University professor and former National Aeronautics and Space Administration scientist who was hired last year to oversee the Klamath scientific studies.

"For me as a scientist, I'd like to know more about those less extreme options," he said.

Houser filed federal whistleblower and scientific-integrity complaints after he says superiors told him his "skills weren't a match for the position" and terminated him, he said in an interview.

He alleges officials wrote a summary and news release to elicit support for dam removal while downplaying negative remarks from scientists that were in the full reports. He said superiors told him to be quiet about his concerns, then he faced increasing scrutiny on his job.

Interior spokeswoman Kate Kelly said May 8 that Houser's complaints are still being reviewed. The Department of the Interior "has established a rigorous and transparent scientific process that is ongoing and will inform the decision about potential removal of the four Klamath River dams," she said in an email.

Work has been proceeding on a final environmental document that will choose a "preferred alternative" among five options, which range from doing nothing to fully dismantling the four dams in Southern Oregon and Northern California.

Other alternatives being considered include partial removal of the dams while keeping some structures behind, removing only two of the four dams, and installing fish passages around the dams, U.S. Fish and Wildlife Service spokesman Matthew Baun has said.

Houser said in his speech that it appears top Interior officials have already decided they want the dams out and are seeking the science to back up their decision.

"Scientists often do their work based on who they're paid by," he said, adding that they stop short of examining all available options. "That happens all the time in science ... and you don't get the unbiased science you need."

Houser's speech came during a three-day swing through the region, where he also was slated to address the Siskiyou County Board of Supervisors on May 8 and a tea party meeting later in the evening.

In speaking out, Houser has become a darling of dam-removal opponents and tea party activists, many of whom attended his speech. His appearance was sponsored by the Bi-State Alliance, a recently formed group fighting for water rights issues.

Hearing Houser's story provides "an assurance that there are honest people in this world and honest people in government," said Leo Bergeron of Montague, Calif., one of the organizers. "We've been dealing with liars and thieves."

Houser acknowledged in the interview he is concerned that his message may be co-opted by people with political agendas, but he was willing to speak to anyone who would listen. He said he did not initially intend to go public but that others, including Siskiyou County officials, forwarded his complaint letter to the media.

"I wanted to make sure that by moving forward on this that I wasn't doing it as a benefit to me," he told the audience. "A lot of scientists in government are doing good work and are afraid to come forward with these kinds of reports because the same thing would happen with them that did with me."

Online

Klamath Hydroelectric Settlement Agreement studies and EIS/EIR: <http://klamathrestoration.gov>

From: Jason Peltier

Sent: Friday, May 11, 2012 9:06 AM

To: Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; 'Martin McIntyre'; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: FW: San Joaquin County , Bd of Supervisors Water Report

Attachments: DO_89323.pdf

Thanks.

From: Jon Rubin [mailto:Jon.Rubin@sldmwa.org]

Sent: Friday, May 11, 2012 7:29 AM

To: Ara Azhderian; jpeltier@westlandswater.org

Subject: San Joaquin County , Bd of Supervisors Water Report

See attached – nothing of great surprise.



**AGENDA ITEM SUBMITTAL FORM
BOARD OF SUPERVISORS
CLERK OF THE BOARD**

44 North San Joaquin Street, Suite 627
Stockton, California 95202

For Clerk's Use Only:
AGENDA NUMBER

SUBMIT ONE COPY OF THIS FORM WITH EACH BOARD AGENDA ITEM.

At the time of submitting your agenda item documents, please **provide ONE ORIGINAL & 7 COPIES OF THE BOARD LETTER AND ANY ACCOMPANYING DOCUMENTS** (Resolutions, Board Orders, Contracts, etc.) for distribution after Board Approval.

If more than one original is required, you must provide the appropriate number of originals to be executed by the Board of Supervisors.

DATE: APRIL 24, 2012

DEPARTMENT:

PUBLIC WORKS

CONTACT & PHONE #:

FRITZ BUCHMAN 8-3089

AGENDA ITEM TITLE: ORAL PRESENTATION AND STAFF REPORT UPDATE ON SACRAMENTO-SAN JOAQUIN DELTA ACTIVITIES

PROPOSED AGENDA PLACEMENT DATE: MAY 8, 2012 **PROPOSED CALENDAR:** DISCUSSION

DISTRIBUTION: (MAILING ADDRESSES MUST BE PROVIDED IF NOT A COUNTY DEPARTMENT)

TO:

DOCUMENT

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Board Clerk

Oral Report

County Counsel

Public Works
(Central Files:)
(Water Resources:)
(Fiscal:)

Special instructions to the Clerk of the Board:

AGENDA ITEMS MUST BE REVIEWED AND SIGNED OFF BY THE DEPARTMENT HEAD, COUNTY ADMINISTRATOR AND COUNTY COUNSEL.

Department Head Signature

Date

4/24/12

WR-12D038-R1

County Administrator 4/24/2012 10:22:58 AM

**BOBBY
MAGEE**

County Counsel 4/24/2012 11:19:00 AM

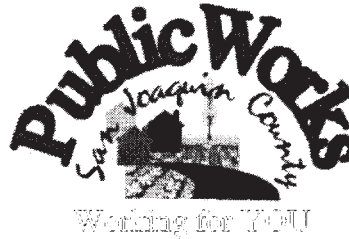
**LAWRENCE
SISTERS**

COB

4/24/2012
11:25:53
AM



THOMAS M. GAU
DIRECTOR



P. O. BOX 1810 - 1810 E. HAZELTON AVENUE
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DEPUTY DIRECTOR

MICHAEL SELLING
DEPUTY DIRECTOR

STEVEN WINKLER
DEPUTY DIRECTOR

ROGER JANES
BUSINESS ADMINISTRATOR

April 24, 2012

Board of Supervisors
44 North San Joaquin Street, Suite 627
Stockton, California 95202

ORAL PRESENTATION AND STAFF REPORT
UPDATE ON SACRAMENTO-SAN JOAQUIN DELTA ACTIVITIES

Dear Board Members:

IT IS RECOMMENDED:

That the Board of Supervisor receive an oral presentation and accept the attached Staff Report Update on Sacramento-San Joaquin Delta Activities.

REASONS FOR RECOMMENDATION:

Approximately two-thirds of the Sacramento-San Joaquin Delta (Delta) is located within San Joaquin County (County), comprising of approximately one-third of the County's area. In total, Delta agricultural production is valued at approximately \$795 million annually resulting in over \$1 billion in additional economic benefit. The Delta is also a critical thoroughfare for infrastructure such as transportation highways, natural gas storage and transmission, and water supply conveyance; a maze of navigable waterways supporting maritime commerce and the transportation of goods, boating and recreation, and fish and wildlife; and a source for local drinking water, as the City of Stockton is preparing to bring the Delta Water Supply Project online this year.

The County is incontrovertibly tied to the long-term economic, social, and environmental viability of the Delta. Current proposals, including State and Federal policies in addition to a proposed isolated conveyance facility, could have a significant adverse affect on communities in the Delta and the Delta watershed. A few examples that conflict with the long-term economic, social, and environmental viability of the Delta and, therefore, the County as a whole include:

- Limiting the sovereignty of local agencies to make land use decisions;
- The diminution of water rights to the detriment of senior water right holders and the area of origin;
- The conversion of over 100,000 acres of agriculture in the Delta shallow water habitat in-lieu of direct mitigation for export pumping and endangered species takings; and,

Board of Supervisors
ORAL AND STAFF REPORT
DELTA ACTIVITIES

-2-

- Potential for continued deterioration in Delta water quality and quantity, resulting in impacts to agriculture, wildlife, recreation and commerce in the Delta.

Consistent with Board of Supervisors' policy direction, County staff has worked to represent the County's position, defend County interests, and constructively participate in many of the ongoing State and Federal activities surrounding the Delta. Since the passage of the Comprehensive Water Package, including the Delta Reform Act of 2009, the need for County efforts to react to and influence the processes, policies and projects created or proposed by the Comprehensive Water Package have increased greatly.

The County has engaged with local, State and Federal agencies, public entities, State and Federal legislators, environmental groups, and private businesses on several fronts to make certain that the County's position and interests would be represented in any action or policy affecting the Delta. A summary of activities over the last year include those of the Delta Stewardship Council, Delta Conservancy, Delta Protection Commission, Bay Delta Conservation Plan, Delta Counties Coalition, State and Federal legislation, and other coalitions is presented in a Staff Report.

FISCAL IMPACT:

For Fiscal Year 2011-12, the Board allocated \$800,000 to the Delta Activities budget. The allocation was in part intended to cover costs of the Department of Public Works and other County Departments including the County Administrator's Office, Agricultural Commissioner's Office, Community Development, County Counsel, and Office of Emergency Services, for costs related to the Delta along with other water related activities.

Through March 31, 2012, the Delta Activities budget expenditures total \$424,624, with a remaining balance of \$375,376. Costs for the remainder of the Fiscal Year are projected to be within the budget allocation.

ACTION FOLLOWING APPROVAL:

County staff will continue to represent and advocate for San Joaquin County's positions on and interest in issues affecting the Sacramento-San Joaquin Delta consistent with Board of Supervisors policy direction, as adopted in the San Joaquin County State and Federal Legislative Platforms and other adopted resolutions.

Sincerely,


THOMAS M. GAU
Director of Public Works

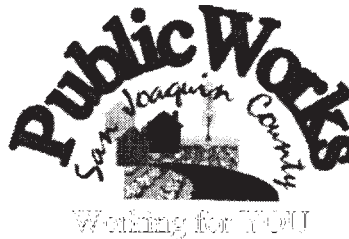
TMG:BN:rc
WR-12D038-R2

c: County Administrator's Office

Board Clerk
May 8, 2012 Agenda



THOMAS M. GAU
DIRECTOR



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STEVEN WINKLER
DEPUTY DIRECTOR

ROGER JANES
BUSINESS ADMINISTRATOR

STAFF REPORT

UPDATE ON SACRAMENTO-SAN JOAQUIN DELTA ACTIVITIES APRIL 24, 2012

Dear Board Members:

IT IS RECOMMENDED:

That the Board of Supervisor accept the Staff Report Update on Sacramento-San Joaquin Delta Activities.

REASONS FOR RECOMMENDATION:

Consistent with Board of Supervisors' policy direction, County staff has worked to represent the County's position, defend County interests, and constructively participate in many of the ongoing State and Federal activities surrounding the Delta. Since the passage of the Comprehensive Water Package, including the Delta Reform Act of 2009, the need for County efforts to react to and influence the processes, policies and projects created or proposed by the Comprehensive Water Package have increased greatly.

The following Staff Report is organized to update the Board of Supervisors on the activities that the County has participated in since the beginning of the current year. The **Coalition Updates** section describes the various Coalitions that the County is actively participating in, including the Partnership for the San Joaquin Valley, the Delta Counties Coalition (DCC), the Delta Coalition led by the Mayor of the City of Stockton, and Coalition for Delta Projects. The next section, **Delta Activities Updates**, describes the major undertakings and activities that the County has participated in related to the Comprehensive Water Package, and a staff recommendation on the strategic importance of additional engagement.

Coalition Updates

Delta Counties Coalition

The County, along with the Delta Counties of Contra Costa, Sacramento, Solano, and Yolo, have formed the DCC to collectively advocate with one voice with regards to Delta activities on behalf of the four million residents of the Delta, and will continue to work cooperatively through common issues such as governance, land use, and water supply and quality impacts to the Delta and its communities. On June 24, 2008, the Board of Supervisors

adopted a Multi-County Resolution (R-08-363) affirming the 11 principles of the 5-Delta Counties and in 2010, reaffirmed those principles and adopted a 12th common principle (R-10-409). The DCC has become an effective voice for Delta interests at the local, State and Federal levels.

Most recently, during the week of March 19, 2012, the DCC sponsored a joint trip to Washington D.C. to advocate DCC principles to the California Congressional and Senatorial delegation, as well as staff of Federal agencies with a major stake in the Delta. The County was represented by Supervisors Ruhstaller and Vogel, the Ferguson Group, and County staff.

California Partnership for the San Joaquin Valley

The California Partnership for the San Joaquin Valley (Partnership) was established by Gubernatorial Executive Order in 2006, to focus attention on one of the most vital, yet challenged regions of the State and implement changes that would improve the economic well-being of the eight San Joaquin Valley Counties, and the quality of life of its residents. The eight San Joaquin Valley Counties include Tulare, Kings, Kern, Fresno, Merced, Tuolumne, Stanislaus, and San Joaquin. Supervisor Ornellas was appointed to the Partnership Board of Directors by Governor Schwarzenegger. The Partnership and the Partnership Water Work Group have worked over the past several years to define the areas of agreement between the eight Counties, rather than focus on areas of disagreement. This collaboration has culminated into the adoption by the full Board of the Partnership a Resolution in support of the Partnership sponsored Integrated Regional Water Management Plan Framework on October 22, 2009.

Recognizing that additional support from areas north of the San Joaquin Valley and the unique position San Joaquin County holds as a bridge between the Delta Counties and the Partnership, both the DCC and Partnership have mutually engaged in a collaborative dialogue to bring together these vital regions with their perspectives and interests to develop a shared vision on actions to help safeguard a sustainable Delta for future generations while ensuring the economic and environmental well-being and an improved quality of life for all Delta and Valley residents. On October 25, 2011, the Partnership adopted a resolution Supporting Proactive Actions to Safeguard a Sustainable Sacramento-San Joaquin Delta. The San Joaquin County Board of Supervisors subsequently adopted the Resolution (R-12-01) on January 10, 2012, as has all four of the other Delta Counties in the DCC.

At the January 20, 2012, meeting of the 12 Delta and San Joaquin Valley County Supervisors, there was preliminary agreement on a number of water projects considered to be beneficial both locally and to the entire region. Currently, the Valley Partnership list includes the Mokelumne River Regional Water Storage and Conjunctive Use Project (MORE WATER), and the South Delta Improvements Program, which proposes to install temporary barriers to improve South Delta water levels and water quality for agriculture. The DCC list of immediate action projects is attached (see handout). The next meeting of the DCC and San Joaquin Valley County Supervisors has been scheduled for May 23, 2012, for the purpose of finalizing a joint list of projects that all 12 Counties can support.

A jointly developed list of projects supported by all 12 Counties may facilitate delivery of and create funding opportunities for the Projects.

Delta Coalition (Mayor's Initiative)

Agencies within the County have officially organized into the Delta Coalition under the City of Stockton Major's Initiative, which includes the County, the seven incorporated Cities within the County, the San Joaquin Council of Governments, the Port of Stockton, and a number of other agencies representing public, private, agricultural, and environmental interests. The Delta Coalition is primarily focused on possible negative impacts of the Delta Plan's "Covered Actions" on land use activities in the County and the detrimental effects of the Bay Delta Conservation Plan (BDCP) to local area water supplies, water quality, fisheries, agriculture, wildlife and habitat friendly agriculture, local habitat mitigation bank opportunities, and the overall economic viability of the greater San Joaquin County and Delta Region.

The Delta Coalition, on April 9, 2012, adopted the Delta Coalition Principles and Position document and also maintains a website at <http://deltacoalition.org/>. The Mayor of Stockton has also requested that the County participate in the Delta Coalition financially, which was the subject of a related staff recommendation on the May 1, 2012, Board of Supervisors Agenda. The estimated contribution level from the County is \$2,000 per month for the period of February through September, totaling \$16,000. The Delta Coalition Business Plan is currently being prepared for consideration by the full Delta Coalition.

Coalition to Support Delta Projects

The Coalition to Support Delta Projects is a grass roots effort started by Delta water interests for the purpose of identifying, selecting and supporting near-term, no-risk or low-risk, and feasible Delta Projects that do not prejudice the outcome of the BDCP or the Delta Stewardship Plan. The first of six meetings was held on April 4, 2012, in Sacramento. The process for moving the Coalition to Support Delta Projects is collaborative and includes facilitation support by the Sacramento State University based Center for Collaborative Policy. Supervisor Ruhstaller and County staff attended the initial meeting, which was well attended and included representatives from the San Joaquin Valley, the greater East Bay and South Bay, Southern California, in-Delta interests from the agricultural, sport fishing and business communities, and several State and Federal Agencies with regulatory and Delta export operations responsibilities.

To be considered for support, project proponents must submit to the Coalition a formatted project description and proposal by May 15, 2012, in advance of the May 23, 2012, second meeting. The County is collaborating with the San Joaquin Area Flood Control Agency, local reclamation districts and water agencies, and the DCC on projects that would be submitted to the Coalition for Delta Projects. Projects could potentially include levee rehabilitation/strengthening, levee armoring along critical through-Delta conveyance channels (Middle River), maintenance dredging, Lower San Joaquin River Bypass Project, and the Smith Canal Gate Closure Structure. Should this Coalition be successful, County

Delta interests could potentially be rewarded with remaining monies in Flood and Water Bond Propositions 1E and 84, proceeds from future bond initiatives, or additional Federal financial support.

Delta Activities Updates

Delta Protection Commission

The Delta Protection Commission (DPC) was created in 1992 to adaptively protect, maintain, and where possible, enhance and restore the overall quality of the Delta environment consistent with the Delta Protection Act, and the Land Use and Resource Management Plan for the Primary Zone. This includes, but is not limited to, agriculture, wildlife habitat, and recreational activities. The goal of the DPC is to ensure orderly, balanced conservation and development of Delta land resources and improved flood protection. A member from each of the Board of Supervisors of the 5-Delta Counties is seated on the DPC.

As part of the Delta Reform Act of 2009, the Legislature established that the DPC prepare and adopt an Economic Sustainability Plan (ESP) and would include information and recommendations that would inform the Delta Stewardship Council's (DSC) policies regarding socioeconomic sustainability policies for the Delta region. The ESP includes public safety proposals such as flood protection recommendations; recommendations to the Department of Water Resources concerning periodic updates of the flood management plan for the Delta; recommendations on continued socioeconomic sustainability of agriculture, infrastructure, and legacy communities in the Delta; identification of methods to encourage recreational investment along the key river corridors; and recommendations on water conveyance, habitat creation, levees, and land use regulation as it relates to the BDCP and the DSC's Delta Plan.

The October 25, 2011, adopted final draft of the DPC ESP, which was developed by experts, peer reviewed, and widely circulated for public comment, has been a key document for the DCC and the County. The adopted ESP concluded that the impacts of current BDCP and Delta Plan proposals for new water supply and ecosystem restoration projects have serious implications for economic sustainability in the Delta. The ESP concludes that through-Delta conveyance bolstered with modest investments in the Delta levee systems are the most cost-effective strategies for economic sustainability in the Delta. The ESP further concludes that through-Delta conveyance is a more feasible and realistic path to achieving the co-equal goals than plans that are built around large isolated water conveyance facilities and the conversion of Delta agricultural lands to habitat. Staff recommends continued circulation and support of the Delta Protection Commission Economic Sustainability Plan as a key document to be seriously considered in the DSC's Delta Plan and the Bay-Delta Conservation Plan.

Delta Stewardship Council

The Delta Reform Act of 2009 created the DSC with the mission to achieve the co-equal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The co-equal goals are to be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. The DSC, by statute, must adopt and implement a comprehensive management plan for the Sacramento-San Joaquin Delta by January 1, 2012. This Delta Plan is intended to guide State and local agencies to help achieve the co-equal goals adopted by the Legislature.

In early 2011, the DSC embarked on an aggressive and optimistic schedule of releasing seven consecutive drafts of the Delta Plan with the intent of issuing a draft Programmatic Environmental Impact Report (EIR) based on the fifth draft. On August 2, 2011, the DSC released the fifth Delta Plan draft, and subsequently released the accompanying Programmatic EIR on November 4, 2011. The County, in partnership with the City of Stockton and other Delta Coalition Members, submitted 96 pages of comments to the DSC on the Program EIR. Additionally, written comments were provided by over 200 entities totaling approximately 5,100 pages.

DSC staff has indicated that the responses to comments are currently being drafted for incorporation into the final EIR. It is also widely considered that the DSC may be putting out a sixth Delta Plan draft and even possibly revising the draft EIR for recirculation and comment by the public. Conflicting unconfirmed reports on the timing of the document releases range from the spring of 2012 for the final Environmental Impact Report to April or June 2012, for the sixth Delta Plan draft.

Sacramento-San Joaquin Delta Conservancy

The Sacramento-San Joaquin Delta Conservancy (Conservancy) was created through the Comprehensive Water Package of 2009 to work collaboratively and in cooperation with local communities, and establish partnerships to protect, preserve, enhance and restore the Delta's environment, agriculture and working landscapes, heritage, property, regional economy and increase opportunities for tourism and environmental education for the benefit of the Delta region, its communities and the citizens of California. Supervisor Vogel is the Vice Chairman of the Conservancy Board

By statute, the Conservancy must prepare and adopt a strategic plan to achieve the goals of the Conservancy and must also be consistent with the following plans and laws:

- The Delta Stewardship Council's Delta Plan.
- The Delta Protection Commission's Land Use and Resource Management Plan for the Primary Zone of the Delta.
- The Central Valley Flood Protection Plan.

- The Habitat Management, Preservation and Restoration Plan for the Suisun Marsh.
- The Suisun Marsh Preservation Act of 1977.

The Conservancy has developed a preliminary Draft Strategic Plan and held three Public Work Sessions in April throughout the Delta to solicit public input. Adoption of the Strategic Plan is scheduled for June 27, 2012. The Preliminary Draft Strategic Plan can be found at the Sacramento-San Joaquin Delta Conservancy's website at:
http://www.deltacconservancy.ca.gov/strategic_plan/sp_overview.html.

Bay-Delta Conservation Plan (BDCP)

The BDCP is a conservation plan intended to meet co-equal goals of "providing a more reliable supply of water and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resources, and agricultural values of the Delta as an evolving place" (California Water Code Section 85054). The California Natural Resources Agency, acting as the lead State Agency for the State and Federal Water Contractors who desire more reliable Delta exports, is developing an Environmental Impact Report/Environmental Impact Statement in accordance with the California Environmental Quality Act and the National Environmental Policy Act. The Public Draft Environmental Impact Report/Environmental Impact Statement is expected to be available for review and comment in June 2012.

The most recent BDCP documents describe the BDCP Environmental Review Process as having considered 15 action alternatives and the no-action alternative. These various alternatives, except for two, are based on the construction of an isolated conveyance facility. All alternatives are fundamentally flawed in the concept that water exported from the Delta can be mitigated for with investments in ecosystem restoration efforts that would create tidal, marsh and/or shallow water habitat in as much as 113,000 acres depending on the alternative. The fundamental BDCP premise ignores the most basic concepts of fisheries management, which dictates that fish like Delta Smelt and Chinook Salmon need water to thrive. Despite the requests of the County and other Delta interests, the BDCP has not evaluated in detail alternatives to isolated conveyance that are more cost effective, reduce impacts to Delta fish and wildlife, minimize impacts to Delta communities, and achieve the co-equal goals.

The financing strategy of the BDCP will likely burden the general taxpayer as opposed to the beneficiaries, namely the State and Federal Water Contractors, with the cost of acquiring and maintaining BDCP habitat. Assembly Bill 2421, proposed by Assemblyman Berryhill, would require a full cost-benefit analysis of the BDCP. The County and the Delta Counties Coalition have advocated for the full analysis to illuminate the true costs to the general taxpayer of the BDCP, as well as the cost of Bay Delta Conservation Plan impacts on Delta communities.

Board of Supervisors
STAFF REPORT
DELTA ACTIVITIES

-7-

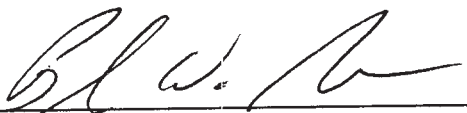
FISCAL IMPACT:

Costs associated with the recommended actions are funded by the Delta Activities Budget.

ACTION FOLLOWING APPROVAL:

County staff will continue to represent and advocate for San Joaquin County's positions on and interest in issues affecting the Sacramento-San Joaquin Delta consistent with Board of Supervisors policy direction, as adopted in the San Joaquin County State and Federal Legislative Platforms and other adopted resolutions.

Prepared by:



BRANDON W. NAKAGAWA, P.E.

Interim Water Resources Division Manager

Date:

4/24/12

DELTA COUNTIES COALITION

IMMEDIATE ACTION PROJECTS that provide improved water quality, water supply reliability, levees and ecosystem improvements

(NOTE: Each project should undergo full environmental review and be pursued in partnership with the local community)

Posted October 1, 2010 DCC

Affirmed July 25, 2011 DCC/CPSJV

PROJECT #1:

Levee Improvements, Emergency Preparedness and Dredging

This composite project includes levee improvements in the western Delta islands, emergency preparedness in advance of levee failures, and dredging in Delta channels to improve flood-flow conveyance and operation of agricultural siphons and pumps. Details are provided below.

- Levee improvements on the western Delta islands (Sherman, Twitchell, Jersey Islands which are publicly owned and other critical islands such as Bethel, Hotchkiss, Bradford) for protecting water supplies and the ecosystem, and on key infrastructure islands (Victoria Island with State Route 4 and water facilities, Jones Tract and Woodward Island with water supply facilities and railroads, Sherman with State Route 160)
- Establish more emergency supplies on island sites in case of levee failures, including stockpiles of rock suitable for levee repair at strategic locations.
- Emergency Planning: Desktop and full field emergency exercises among state and local agencies
- Streamline the process used by the Department of Water Resources to administer the Delta Levee Subventions and Special Projects Programs
- Dredge Delta shipping channels to improve flood-flow conveyance and improve operations for private agricultural siphons and pumps, and provide spoils material which could be used to reinforce levees. Dredging would be conducted in the center of channels to avoid impacts to wetland plants and riparian habitat. Dredging would be conducted using either a sealed clamshell dredge or hydraulic dredge in an effort to minimize any environment impacts. The project could be used to evaluate the feasibility of instituting a more comprehensive dredging program throughout the Delta on a period basis.

Project Cost: \$28 Million for dredging component; levee costs to be determined.

PROJECT 2#

Improve Techniques for Eradicating Non-Native Submerged and Floating Aquatic Vegetation from Delta Waterways.

- Non-native invasive Submerged Aquatic Vegetation (SAV) and Floating Aquatic Vegetation (FAV) species have invaded large areas of the Delta and the invasion is continuing to expand and colonize new areas. Removing non-native SAV and FAV from Delta waterways will restore turbidity levels to favor native fisheries such as smelt and salmon.
- The current vegetation removal program administered by Department of Boating and Waterways includes herbicide application and mechanical harvesting. Both of these techniques are limited in their effectiveness for *Egeria Densa*, one of the largest problems in the Delta.
- New techniques or species specific herbicides should be developed to combat *Egeria Densa*. Funding should be provided to support research efforts aimed at eradicating *Egeria Densa*.

PROJECT 3#

Pilot Fish Screens at Clifton Court Forebay

- Demonstration project with a 2,000 cfs positive barrier screened intake on Clifton Court Forebay will provide immediate fish benefits.
- Project will continue to provide benefits in the long term, with or without an isolated facility.
- Would have prevented shutdown of both CVP and SWP pumps in May 2009 due to excessive take at Clifton Court salvage facility.
- August 2009 USFWS study shows delta smelt losses and take is 5 to 200 times worse than previously believed in Clifton Court Forebay, making pumps more vulnerable than ever to shutdowns due to take.
- The Metropolitan Water District, Contra Costa Water District, Santa Clara Valley Water District, Alameda County Water District, and Zone 7 Water Agency are currently conducting a Study to Develop Alternatives for Pilot Fish Screens.
- Results from study should be available by the end of 2010 and if those results are positive, implementation should be the next step.

PROJECT 4#

Lower San Joaquin River Regional Bypass

- Paradise Cut is a federal flood control bypass which was designed to carry up to 15,000 cfs of flood waters away from the urban areas along the San Joaquin River. It is currently the only bypass in the South Delta and connects the San Joaquin River to Grant Line Canal. The bypass was designed to divert flows in the San Joaquin River which exceed a four year storm, but due to sedimentation, the bypass currently carries only a maximum of 10,500 cfs which is less than the design flow. This proposed project involves improvements to Paradise Cut which

will help to restore design flows in the Paradise Cut bypass and also expand it to accommodate additional bypass flows. The project would involve:

- Removing sediment which currently blocks the rock weir and reduces the bypass capacity;
- Setting back levees along the north side of Paradise Cut and creating significant sustainable riparian habitat for an endangered riparian brush rabbit;
- Widening of existing Paradise Weir from 180 feet wide to 400 feet by constructing a 220 foot wide weir adjacent to the existing one;
- Constructing of an additional 500 foot weir at some location upstream of the Paradise Weir or widening of the existing Paradise Weir to an ultimate 900 feet;
- Construction of a bypass channel by excavating a shallow (0 to 10 foot deep) channel to establish positive flow to and into Paradise Cut and construction of 15 to 20 foot high levees on either side;
- Connection of a new channel to a widened Paradise Cut which would set back the southern levees in Paradise Cut by approximately 1,000 feet;
- Dredging of Salmon Slough and Doughty Cut as an optional component, to decrease downstream flooding impacts that could be created from increases in flood waters flowing over the widened additional weirs; and,
- Creation of flood storage areas as an optional component to decrease peak flood events and to allow for queuing of flood flows into the proposed channels and into Paradise Cut, minimizing downstream flooding impacts.

PROJECT 5#

Suisun Marsh Restoration

- Restore 7,000 acres of brackish tidal habitat in the Suisun Marsh in coordination with the Suisun Marsh Habitat Restoration and Management Plan.
- This project will increase rearing habitat area for Chinook salmon, Sacramento split tail, and possibly steelhead and increase the local production of food for rearing salmonids, split tail
- This project will also increase the availability and production of food in Suisun Bay for delta and long fin smelt.

From: Jason Peltier

Sent: Monday, June 4, 2012 9:34 AM

To: T Birmingham; Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; Martin McIntyre; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheehan,Rebecca D; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: Someone obviously briefed them in depth....

From: Jason Peltier [mailto:jpeltier@westlandswater.org]

Sent: Monday, June 04, 2012 9:32 AM

Subject: SFChron

CHRONICLE EDITORIALS

California Peripheral canal coming soon

San Francisco Chronicle June 3, 2012 04:00 AM [Copyright San Francisco Chronicle. All rights reserved. This material may not be published, broadcast, rewritten or redistributed.](#)

Sunday, June 3, 2012

While the future of a proposed high-speed railroad to move people in California remains in doubt, a proposed giant canal to move water from Northern California to the south appears almost assured - with a little help from Washington. Now the questions are: How big? And whose hand is on the spigot?

The project - 30 years in the making, including six years of scientific study funded by water agencies, and known euphemistically as a conveyance facility and politically as the Peripheral Canal - hit a logjam last month. A raft of scientific reports suggested that what the state water contractors wanted - more water - would conflict with what the state and federal government are legally obligated to do - restore fish habitat.

So state water planners asked the contractors to spend more than the \$150 million they have already spent on scientific studies. The contractors balked, and the Kern County Water Agency Board of Directors demanded that the state and federal agencies deliver a description of the project (the legal green light to build) by June or it might walk.

Two weeks later, federal officials took over the show. The Interior Department convened meetings near San Francisco with state water and fish officials to discuss what a canal or tunnel the fish agencies would issue a permit to operate might look like. The fish agencies said: one

that would export between 4.5 million acre feet and 5.5 million acre feet a year. (The state exports 4.9 million acre feet now, and the delta ecosystem is suffering.)

That range now will serve as the rough outline of the project the water contractors are demanding. Also agreed: a 15-year window to figure out how to run the canal, begin aggressive wetlands restorations work and a process to adjust operations as new data came in.

The contractors did give on what they really wanted: a project to export 5.9 million acre feet because the fish agencies said it was not possible. Now they must determine: Does it make economic sense for them to spend \$12 billion or more on a canal that might deliver less water?

Will their customers be able to pay more for water and still grow almonds or other crops profitably?

Environmental advocates, whose views on the canal range from no canal to a yes-but-divert-less-water canal, rejoiced that *reduced* water exports finally were on the table for negotiation. Yet the question remains: Will this plan reduce reliance on delta water, as state law demands?

Those who live in the Sacramento-San Joaquin River Delta area, however, are outraged. Rep. Jerry McNerney, D-Stockton, whose newly drawn congressional district wraps the delta's eastern side where the "chunnel" would be built is one. "The problem is they started with the answer and are looking for data to support it," he said.

"There are better ways to supply water to Southern California than taking the Sacramento River away from us."

For the Bay Area, including the 3 million residents and businesses who depend on delta water, many questions remain:

-- How can the state commit to building a canal if we don't know if ecosystem needs or water contracts determine operations? (State law calls for "co-equal" uses.)

-- If the process is based on science rather than politics, then who asks the scientific questions?

-- What assurances are in place that fishermen will get some amount of water for fish, and that cities will get good quality drinking water?

Water-saving technology has helped the state conserve enough water that urban use has remained flat since the mid-1990s despite a growing population, and agricultural use has declined since the 1980s, according to a Public Policy Institute of California report. However, Californians can - and must - do more. The new plan includes a nod to more recycling, conservation and reservoirs, ideas that were disparaged in earlier discussions.

In short, there is much we don't know. We do know it looks like water contractors will get their canal.

Read more: <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2012/06/01/INAT1MO1ES.DTL#ixzz1wqI3y6Q1>

From: Jason Peltier

Sent: Saturday, June 9, 2012 7:43 AM

To: T Birmingham; Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; Martin McIntyre; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheehan,Rebecca D; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: opportunity missed

http://www.deltavisionfoundation.org/pdfs/Appendix_E_Open-ended_Survey_Questions_and_Responses_6-5-12.pdf

From: Jason Peltier

Sent: Wednesday, June 20, 2012 8:53 AM

To: Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; Martin McIntyre; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheehan,Rebecca D; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: new kelp

Invasive brown kelp worries Calif. researchers

[Peter Fimrite](#)

San Francisco Chronicle June 20, 2012 04:00 AM [Copyright San Francisco Chronicle. All rights reserved. This material may not be published, broadcast, rewritten or redistributed.](#)

Wednesday, June 20, 2012

14





Brant Ward / The Chronicle

The weed has a history of wiping out native kelp.

A highly invasive form of brown kelp native to Japan has spread throughout the San Francisco waterfront since it was discovered three years ago and could threaten native species and ecosystems if money and resources aren't put into stopping its spread, researchers say.

The seaweed, commonly known as Wakame, multiplies at a feverish rate, and has driven out native kelp and drastically altered entire ecosystems in other places, including Argentina, New Zealand and parts of Europe.

The alien kelp, which is a common ingredient in miso soup, was discovered in 2009 at the San Francisco Yacht Harbor, in the Marina, and at the South Beach Harbor near Pier 40, prompting widespread alarm and a concerted effort by marina workers and biologists to get rid of it.

The watery weed, known in scientific circles as *Undaria pinnatifida*, can attach itself to almost anything - pilings, boats, docks, chains, riprap - and grow an inch a day, with individuals sometimes stretching 9 feet or more across. It likes cold water as low as 32 degrees Fahrenheit, but also thrives as far south as Baja California, where the water is 10 degrees warmer than it is in the Bay Area.

Spreading northward

The algae species, recognized globally as one of the world's top 100 invasive species, was introduced to California about 12 years ago, probably by a ship that moored in the Long Beach area. It was discovered in [Monterey](#) in 2001 and in Mexico in 2002. It has since spread northward along the coast, most likely by hitching rides on boats.

Last year, researchers with the Smithsonian Environmental Research Center found it clinging to piers and docks in several more places along the San Francisco waterfront, including Fort Mason, Pier 39, Fisherman's Wharf and along the Hyde Street pier. The infestation had gotten worse near AT&T Park and at Pillar Point Harbor, in Half Moon Bay.

"In San Francisco Bay, it is now widespread enough, and on so many pier pilings that we can't get to, that I don't think we can remove it by hand," said Chela Zabin, a biologist for the Maryland-based research center and the UC Davis. "It's a potentially very serious problem."

Zabin, who works out of a Smithsonian satellite office at the Romberg Tiburon Center for Environmental Studies in Marin County, said the removal effort faces several obstacles, not the least of which is that there is no money available for research or to pay for an eradication effort, making it an all-volunteer affair.

Elimination challenge

She and biologists with the Aquarium of the Bay near Pier 39 regularly go out looking for the slimy blooms, but even if there were enough workers and funding, total elimination would be a tricky [proposition](#). The species shoots out thousands of microscopic spores that can remain dormant for up to two years, she said.

"We pull out the large sprouts, but any time we find one that has released spores it sets the clock back for two years," Zabin said. "Another problem is that the water in San Francisco Bay is very turbid and, a lot of times, even if it is only 2 feet below the surface, we can't see it. So it's a challenge and even if we were getting rid of every single individual we'd still have that two-year lag time, and that's assuming another boat doesn't come in and reinfect the area."

The weed can be killed by containing the infected area and immersing it in fresh water or by subjecting it to heat. The problem is, those tactics cost money.

Zabin said if the spread of the seaweed is not checked, it could eventually outcompete the native seaweeds, including giant kelp, the majestic floating seaweed species common to Monterey Bay whose limbs can reach 200 feet below the surface. Many fish and other aquatic animals depend on the giant kelp for food, shelter to lay eggs on or to escape from predators. These functions cannot be replaced by *Undaria pinnatifida*, which is more like a giant banana leaf that sinks below the surface and attaches itself to things, Zabin said.

"We don't want to overstate what it is going to do," Zabin said, "but there is enough evidence from around the world to know that it can be very disruptive to natural areas and negatively affect native species."

Read more: <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2012/06/19/BAPG1OV424.DTL#ixzz1yLiSSeli>

From: Jason Peltier

Sent: Wednesday, June 20, 2012 1:30 PM

To: Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; Martin McIntyre; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheehan,Rebecca D; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: FW: NDRC's Water Pipelines Report

Attachments: NRDC - Water-Pipelines-report.pdf

From: Mike Henry [mailto:mhenry@farmwater.org]

Sent: Wednesday, June 20, 2012 10:48 AM

To: Jason Peltier

Subject: NRDC's Water Pipelines Report

Attached

Pipe Dreams: Water Supply Pipeline Projects in the West

EXECUTIVE SUMMARY

Large-scale water supply conveyance pipelines have long been an important tool for addressing water needs in the western United States. These pipelines have traditionally been used as a component in complex water projects constructed to capture, store, and move water to serve urban and agricultural users. Traditional water projects have long been designed to tap into major sources of water, frequently through the construction of surface storage projects and associated pipelines, canals, and pumping stations. Indeed, dams have often been the most well known and expensive features of large water projects, which often came at high economic and environmental costs. In the last 20 years, the construction of new dams has slowed to a trickle for a variety of reasons, including the lack of available “new” water, the growing costs of these projects, and a public that is more protective of its rivers.

The western water landscape has changed dramatically in recent years. This is a factor that should be seriously considered by water managers as they design solutions to meet the needs of the coming century. Today, the new conditions facing water managers in the West may guide us to new solutions. Indeed, many managers are shifting focus to groundwater storage, water recycling, and a suite of water efficiency tools. A number of water interests, however, continue to propose a new generation of large scale water conveyance projects around the West—some of which may be significantly less reliable than past projects, raising important questions around their level of cost-effectiveness and sustainability.

Some of the new water conveyance projects described in this report could increase the water supply vulnerability, over the long-term, of communities that rely upon them. For example, for proposed projects for which groundwater is key, it is important to note that in many parts of the West, groundwater is withdrawn more quickly than natural recharge can replenish the supply. Such groundwater mining is inherently unsustainable.

Other proposed pipeline projects would tap into surface water supplies from rivers that are already under stress from existing users. In addition, climate change and other factors suggest that water from some sources will be less reliable during the driest years and in the long-term. With more stress on water sources, the competition from established users, often with older priority dates, suggests more conflict in the future for some proposed projects. When evaluating proposed projects, it is important to remember that water conveyance projects can only generate reliable water supplies if they tap into reliable water sources. In short, water projects that rely on unreliable sources could lead to future shortages for the very communities that pay for these expensive facilities.

In addition, the energy costs of proposed conveyance projects can be enormous, requiring the commitment of massive quantities of power (and, except in rare cases, greenhouse gas emissions) to pump and move water to the location where it would be used. An acre-foot (af) of water weighs more than 1,360 tons. Therefore, the energy costs associated with moving water are extraordinarily high. For example, pumping water from the San Francisco Bay-Delta to Southern California requires approximately 3,200 kilowatt hours (kwh) per af, the State Water Project the state's single largest user of electricity.¹ Nonetheless, federal, state, and local water agencies continue to propose new pipeline projects, often with little analysis of energy requirements and usually without incorporating the use of renewable energy.

The western United States already has more than its share of water conflicts and unsustainable uses. In designing new projects, NRDC suggests that water managers follow the old adage: When you find yourself in a hole, the first thing to do is to stop digging. Today, water managers have a range of alternatives to new pipeline projects, including urban and agricultural water-use efficiency, voluntary water transfers, water recycling, improved groundwater management, and more. The success of efficiency efforts can be seen today across the West. Many of these less environmentally disruptive alternatives are more reliable, more affordable, less vulnerable to climate change impacts, and less energy intensive than traditional water development projects.

This report provides a brief introduction to some of the pipeline projects proposed recently in the West. Also, it provides a summary of issues that have often been overlooked in proposed pipeline projects, and recommendations for a more effective approach to meeting the water needs of western communities. Our recommendations, which address a broad range of issues, such as sustainability, cost, and energy use include:

- * New water supply projects in the West should be designed to reduce, rather than increase, the current imbalances in water use, such as groundwater overdraft and overcommitted surface water sources.

- * Federal funds should be focused on projects where there is a strong federal nexus, such as resolving Native American water rights claims and addressing endangered species issues. Also, state and federal water supply funding should be focused on the most affordable and reliable projects—those that increase the efficiency of water use and re-use, as opposed to traditional water development, particularly in regions such projects would be unsustainable.

- * A beneficiary-pays approach to financing water projects provides the best way to internalize the costs of water projects and encourage efficient water use.

INTRODUCTION

New water management strategies are needed in the western United States. With mounting populations, over-tapped rivers, extended droughts and severely damaged aquatic ecosystems, water managers face increasing challenges in locating reliable water supplies for their communities, to protect their natural systems, and to sustain local and regional economies. (more)

Mike Henry, Assistant Executive Director

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Pipe Dreams: Water Supply Pipeline Projects in the West

June 2012



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About NRDC

The Natural Resources Defense Council is an international nonprofit environmental organization with more than 1.3 million members and online activists. Since 1970, our lawyers, scientists, and other environmental specialists have worked to protect the world's natural resources, public health, and the environment. NRDC has offices in New York City, Washington, D.C., Los Angeles, San Francisco, Chicago, Montana, and Beijing. Visit us at www.nrdc.org.

Acknowledgments

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This white paper also received substantial input and review from a number of individuals. Their participation contributed to the quality of the document and its recommendations. We acknowledge that they may not necessarily endorse all of the recommendations, which are solely those of the Natural Resources Defense Council. In particular, we wish to thank our peer reviewers: Robert Adler, University of Utah, S. J. Quinney College of Law; Lawrence J. MacDonnell, University of Wyoming College of Law; Rita Maguire, Attorney and Former Director of Arizona Department of Water Resources; Stacy Tellinghuisen, Western Resource Advocates; an anonymous reviewer; and NRDC staff, including Sheryl Carter, Steve Fleischli, and Ed Osann.

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Also, it provides a summary of issues that have often been overlooked in proposed pipeline projects, and recommendations for a more effective approach to meeting the water needs of western communities. Our recommendations, which address a broad range of issues, such as sustainability, cost, and energy use include:

- New water supply projects in the West should be designed to reduce, rather than increase, the current imbalances in water use, such as groundwater overdraft and overcommitted surface water sources.
- Federal funds should be focused on projects where there is a strong federal nexus, such as resolving Native American water rights claims and addressing endangered species issues. Also, state and federal water supply funding should be focused on the most affordable and reliable projects—those that increase the efficiency of water use and re-use, as opposed to traditional water development, particularly in regions such projects would be unsustainable.
- A beneficiary-pays approach to financing water projects provides the best way to internalize the costs of water projects and encourage efficient water use.



- Proposed pipeline projects should include an analysis of *all* of the following issues:
 - The capital, financing, planning, mitigation, operating, and maintenance costs of the proposed project, in comparison with the benefits. This should include an analysis of the external costs of proposed projects, such as environmental impacts.
 - All feasible alternatives to the project, particularly urban and agricultural water-use efficiency, water recycling, urban stormwater capture, and voluntary water transfers.
 - Energy use and energy sources.
 - Potential new greenhouse gas emissions.
 - The reliability of proposed water sources, including the potential impacts of climate change on the water sources.
 - Potential impacts to existing water users and communities.
- Potential impacts of proposed new transbasin diversions on water use in the basin of origination.
- State water agencies, tribal governments, environmentalists, and other stakeholders should work collaboratively to investigate these issues, including possible effects across political or hydrologic boundaries.
- Given the number of proposed projects to divert water from the Colorado River, as well as into the Basin, the Bureau of Reclamation's (BOR) Colorado River Basin Water Supply and Demand Study and subsequent efforts should address the cumulative potential impacts of the potential projects summarized in this report.
- Energy for future pipeline projects should be provided through investments in renewable energy sources. Also, water agencies should invest in renewable sources to provide the energy required for existing pipeline projects, such as California's State Water Project.
- The new Principles and Guidelines for Water and Land Related Resources that are under development by federal agencies should address the issues discussed in this paper, to provide decision-makers a more complete understanding of proposed projects.
- Federal agencies, particularly the BOR, should report the energy usage of existing and new projects, as they comply with President Obama's Executive Order on Greenhouse Gasses.
- Ratepayers should be provided with information regarding these issues before water utilities make decisions on proposed water supply projects.

I. INTRODUCTION

New water management strategies are needed in the western United States. With mounting populations, over-tapped rivers, extended droughts and severely damaged aquatic ecosystems, water managers face increasing challenges in locating reliable water supplies for their communities, to protect their natural systems, and to sustain local and regional economies.

In the last century, reservoirs and associated pipelines and aqueducts were the dominant strategy for providing water in the western United States. The BOR alone lists 339 dams among its project facilities.² The Corps of Engineers and state and local water agencies have constructed hundreds of additional facilities. California's State Water Project includes 34 storage facilities and more than 700 miles of pipelines and canals.³ These projects made possible the development of many large western cities and extensive irrigated agriculture.

This traditional water supply development pattern has slowed dramatically over the past two decades. There are many reasons for this change. First, traditional infrastructure projects are increasingly expensive and many ratepayers are resistant to further increases in water rates that have risen dramatically in recent years. Further, in much of the West, there is little "new" water to be developed by traditional water projects. Indeed, many rivers have already hit clear limits in terms of the water available for diversion. In addition, the public is increasingly supportive of efforts to protect rivers and wildlife. Finally, in much of the West, climate change is anticipated to further reduce available water supplies from traditional water projects.

At the moment, western water managers are pursuing two diametrically opposed strategies. On the one hand, many water agencies are investing in water conservation, water recycling, groundwater clean-up, and other tools designed to increase the efficiency with which we use existing supplies. On the other hand, some water managers and private entrepreneurs have offered a growing number of proposals for public and private long-distance water supply pipelines—usually without the surface storage projects that have been so common over the past century. Some of these projects are

extremely large in scale and would stretch for hundreds of miles. This new generation of long-distance pipelines raises a host of questions for water policymakers and the public.

This analysis revealed that a range of key issues have often been overlooked in the analysis of these proposed projects. These issues include:

- Serious questions about the reliability of surface and groundwater sources for proposed pipeline projects, including potential environmental impacts, existing constraints on water sources, and the likely impacts of climate change on these supplies.
- Potential water user impacts, including impacts from proposed projects on other water users in overtapped basins, as well as water rate impacts and potential long-term water shortages for the communities that would rely on proposed new projects.
- The high financial and energy cost of many proposed pipeline projects.
- The growing number of proven, cost-effective, alternative approaches—particularly water use efficiency—that could offer greater potential to meet the needs of western communities more cheaply and reliably.

This report concludes that many of the pipeline projects under consideration today are dramatically different from those constructed in the past, in terms of sustainability of water supplies, available alternatives, costs, environmental impacts and energy use. The communities and agencies that are considering these projects would be well served by a careful analysis of the implications of these important choices.

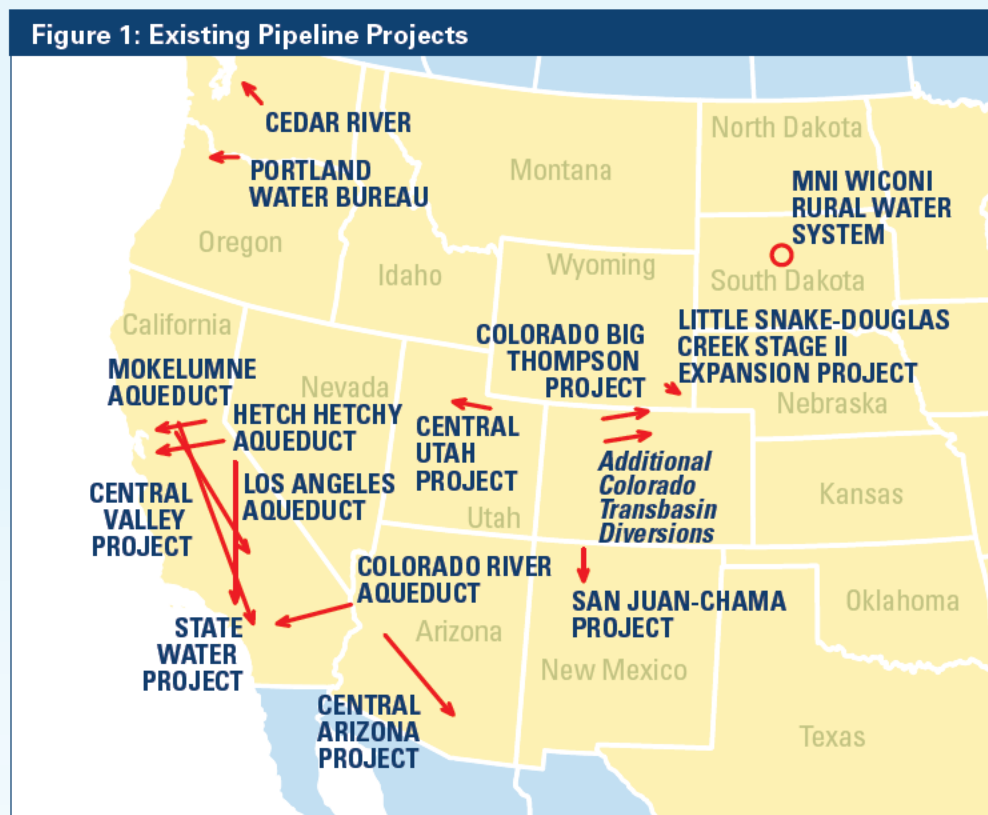
II. PIPELINE PROJECTS: EXISTING AND IN DEVELOPMENT

Pipelines and aqueducts have been a familiar part of the landscape in the western United States for more than a century. Many of these projects involve surface reservoirs and transbasin diversions. The American West is noteworthy in the history of water development, because the West was where the world first learned how to build dams on large river systems. In addition, the West still contains some of the most ambitious water engineering projects on the globe (see figure 1 and table A).¹ A summary of the existing projects listed on the next page can be found in Appendix A.

Table A. Existing Major Pipeline Project in the West

Project	Delivery Volume (afy)	Transbasin Diversion	Length (mi)
Little Snake-Douglas Creek Project, WY	21,000	Yes	21 miles diversion pipeline; 113 miles of delivery pipeline
The Colorado-Big Thompson Project, CO	213,000	Yes	35 miles of tunnels; 95 miles of canals
Additional Colorado Transbasin Diversions, CO. Grand River Ditch, Harold D. Roberts Tunnel, Homestake Tunnel, Moffat Water Tunnel and Twin Lakes Tunnel	150,000	Yes	56.6 miles of tunnels
San Joan-Chama Project, NM	86,210	Yes	27 miles of tunnels
Central Utah Project, UT	218,000	Yes	More than 200 miles of aqueducts, tunnels, and canals
Central Arizona Project, AZ	1,500,000	Yes	335 miles of aqueducts, 15 miles of tunnels
Colorado River Aqueduct, CA	1,200,000	Yes	242 miles of aqueduct; 63 miles of canals; 92 miles of tunnels; 84 miles of buried conduit and siphons
Los Angeles Aqueduct, CA	254,000	Yes	223 miles of canal and pipelines—first aqueduct. 137 miles—second aqueduct
California State Water Project, CA	2,400,000	Yes	700 miles of pipelines and canals
Central Valley Project, CA	5,300,000	Yes	500 miles of canals, conduits, tunnels, and related facilities
Hetch Hetchy Aqueduct, CA	165,000	No. Transfer to a different sub-basin	160 miles of pipeline
Mokelumne Aqueduct, CA	364,000	No. Transfer to a different sub-basin	91 miles of pipeline
Portland Water Bureau, OR	132,000	No. Transfer to a different sub-basin	26 miles of pipeline
Cedar River, WA	103,500	No	56 miles of pipelines
Mni Wiconi Rural Water System, SD	Projected 8,591–12,474	No	4,400 miles of pipelines

This paper summarizes 19 of the more prominent existing pipeline projects in the West. These projects were selected to include the largest pipeline projects, as well as broad geographic representation. The projects are summarized in roughly clockwise order as shown on figure 1, beginning in the headwaters of the Colorado River.



Little Snake-Douglas Creek Project, WY

- Communities Served: Cheyenne, Wyoming
- Water Source: Douglas Creek Watershed and Little Snake Watershed

The Colorado-Big Thompson Project, CO

- Communities Served: Colorado Front Range and Plains
- Water Source: West Slope water from Colorado River headwaters

Additional Colorado Transbasin Diversions, CO. Grand River Ditch, Harold D. Roberts Tunnel, Homestake Tunnel, Moffat Water Tunnel and Twin Lakes Tunnel

- Communities Served: Colorado Front Range
- Water Source: Colorado River Basin

San Joan-Chama Project, NM

- Communities Served: Rio Grande Basin
- Water Source: San Juan River Tributaries

Central Utah Project, UT

- Communities Served: Uintah and Bonneville Basins, and the Wasatch Front
- Water Source: Bonneville and Green River Basins

Central Arizona Project, AZ

- Communities Served: Southern Arizona
- Water Source: Colorado River
- Southern California

Colorado River Aqueduct, CA

- Communities Served: Southern California
- Water Source: Colorado River

Los Angeles Aqueduct, CA

- Community Served: Los Angeles
- Water Source: Mono Lake Basin and Owens River

California State Water Project, CA

- Communities Served: California's Central Valley, Alameda and Santa Clara Counties, cities on the northern edge of the San Francisco Bay Area, California's Central Coast, Southern California
- Water Source: Sacramento-San Joaquin Delta

Central Valley Project, CA

- Communities Served: Central Valley, Central Coast, and Santa Clara County
- Water Source: Sacramento-San Joaquin Delta

Hetch Hetchy Aqueduct, CA

- Communities Served: San Francisco, San Mateo, Santa Clara and Alameda Counties
- Water Source: Tuolumne River in Yosemite National Park

Mokelumne Aqueduct, CA

- Communities Served: East Bay communities, including Oakland, Berkeley and Richmond
- Water Source: Mokelumne River

Portland Water Bureau, OR

- Communities Served: Portland, OR
- Water Source: Bull Run watershed

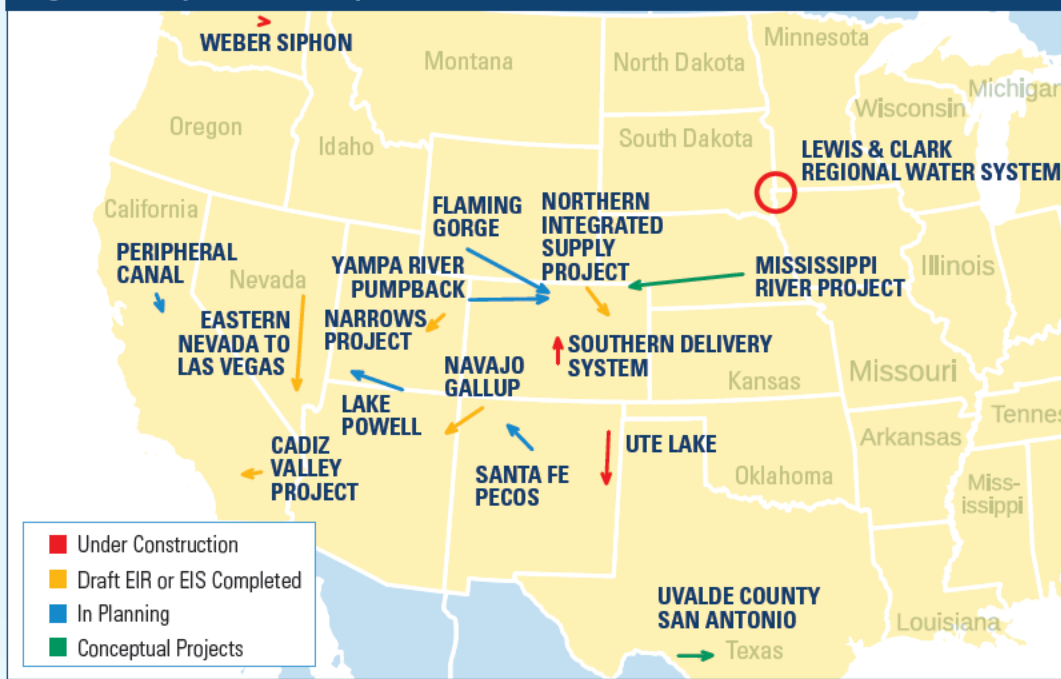
Cedar River, WA

- Communities Served: Seattle, WA
- Water Source: Cedar River

Mni Wiconi Rural Water System, SD

- Communities Served: South Dakota
- Water Source: Missouri River

Figure 2: Projects in the Pipeline



Flaming Gorge, WY and CO

- Communities Served: The Front Range of Colorado, and Wyoming
- Water Source: Green River
- Federal Funding: Funding not yet identified

Lake Powell Project, AZ and UT

- Communities Served: Utah
- Water Source: Colorado River
- Federal Funding: No

Yampa River Pumpback, CO

- Communities Served: The Front Range of Colorado
- Water Source: Yampa River
- Federal Funding: No

Navajo-Gallup Project, NM

- Communities Served: Eastern section of the Navajo Nation, the southwestern part of the Jicarilla Apache Nation, and the city of Gallup
- Water Source: San Juan River
- Federal Funding: Yes (100%)

Southern Delivery System, CO

- Communities Served: Colorado Springs and surrounding communities
- Water Source: Arkansas River
- Federal Funding: No

Cadiz Valley Water Conservation, Recovery and Storage Project, CA

- Communities Served: Southern California Water Districts
- Water Source: Groundwater from Bristol, Fenner, and Cadiz Watersheds
- Federal Funding: No

Peripheral Canal/Tunnel, CA

- Communities Served: Central California, Southern California, and some Northern California water agencies
- Water Source: Sacramento River
- Federal Funding: No

Weber Siphon, WA

- Communities Served: Agricultural land in the Odessa Subregion in Washington State
- Water Source: Columbia River
- Federal Funding: Yes (100%)

Lewis and Clark Regional Water System, SD, IA, and MN

- Communities Served: South Dakota, Iowa, Minnesota
- Water Source: Aquifer adjacent to the Missouri River near Vermillion, SD
- Federal Funding: Yes (80%)

Mississippi River/Ogallala Aquifer, Various states

- Communities Served: Colorado River Basin communities, including Las Vegas, and western irrigation
- Water Source: Mississippi River
- Federal Funding: No

Narrows Project, UT

- Communities Served: Sanpete County in Utah
- Source: Price River, a tributary of the Green River
- Federal Funding: The applicants propose funding from the Small Reclamation Projects Act

Ute Lake Project, NM

- Communities Served: Eight eastern New Mexico communities
- Water Source: Canadian River
- Federal Funding: Yes (75%)

Santa Fe-Pecos, NM

- Communities Served: Santa Fe and other communities in the Rio Grande Basin
- Water Source: Transfer of Pecos River water rights used for agriculture
- Federal Funding: No

Eastern Nevada to Las Vegas, NV

- Communities Served: Las Vegas and surrounding communities
- Water Source: Groundwater from 5 Basins: Snake Valley, Spring Valley, Cave Valley, Dry Lake Valley, and Delamar Valley
- Federal Funding: No

Northern Integrated Supply Project, CO

- Communities Served: 15 Northern Front Range water providers
- Water Source: Cache la Poudre River
- Federal Funding: No

Uvalde County – San Antonio Pipeline Project, TX

- Communities Served: San Antonio, Texas
- Water Source: Groundwater from Edwards Aquifer
- Federal Funding: No

In recent years, a host of new water conveyance pipeline projects have been proposed by western water managers and entrepreneurs. (Please see figure 2 and table B. Appendix B also includes a summary of the 15 proposed projects presented in table B, which are at various stages of planning and construction.)

PROPOSED MAJOR PIPELINE PROJECT IN THE WEST

In April of 2012, the BOR's Colorado River Basin Water Supply and Demand Study released a summary of more than 140 options that have been submitted by stakeholders to help resolve water supply and demand imbalances in the basin.² Thirty-one percent of the options received by BOR included increasing available supply through a range of strategies such as new pipelines, desalination in Southern California and Mexico, water recycling, cloud seeding, and watershed management. The list of pipeline-related options includes proposals to import water from rivers including the Snake, the Columbia, the Clark's Fork of the Yellowstone River, the Missouri, the Mississippi, and the Bear. Many of these proposals appear to be at a conceptual level. (With the exception of the Mississippi River project, which has been proposed elsewhere, these projects are not included in figure 1 and table B. Brief summaries of these proposals are,

however, included in Appendix B.)³

There is a critical difference between most of the proposed pipeline projects summarized here and many of those built in the past century. Most of the pipeline projects in the past were constructed as part of larger water projects. In particular, most of the existing projects were built in conjunction with surface storage projects on major river systems. These surface storage projects were expensive and often came at significant environmental cost. Nevertheless, they produced relatively reliable sources of water for pipelines and aqueducts to carry to distant users. By comparison, most of the new generation of pipeline projects do not include new surface storage facilities. As the discussion in the next section indicates, this change is, to a large extent, the result of the far less abundant water sources that this new generation of pipeline projects propose to tap into.

Together, these new pipeline proposals represent a significant new phase in western water policy, which present critical issues that must be closely examined before new projects and those under development are pursued further. Key issues include: 1) sustainability of water sources, including environmental impacts, existing uses and climate change; 2) transbasin diversions; 3) potential alternatives, including water use efficiency; 4) renewable and conventional energy use; and 5) the role of federal agencies. All of these issues are examined in depth in the following chapters.

Table B. Projects in the Pipeline

Colorado River Basin Projects	Delivery Volume (afy)	Transbasin Diversion	Project Cost	Length (mi)
Flaming Gorge Pipeline, WY and CO	250,000	Yes	\$6 BB	500
Lake Powell Pipeline Project, AZ and UT	100,000	No	\$1.064 BB	158
Yampa River Pumpback, CO	300,000	Yes	\$3.2 BB to Front Range \$3.9 BB to Denver	250
Gallup-Navajo Pipeline Project, NM	35,893	Yes	\$864 MM	260
Narrows Project	5,400	Yes	\$40.3 MM	16.8
Total Proposed New Colorado River Diversions	691,293			
Other Western Projects				
Southern Delivery System, CO	52,900	No	\$1.1 BB	62
Ute Lake Pipeline Project, NM	16,450	No	\$500 MM	87.5 miles of transmission pipelines, 94.8 miles of lateral pipelines
Santa Fe-Pecos Pipeline, NM	6,600	Yes	Unknown	150
Eastern Nevada to Las Vegas Pipeline, NV	84,000 (SNWA projects a maximum capacity of 217,655)	Yes	\$3.5 BB	300
Cadiz Valley Water Conservation, Recovery and Storage Project, CA	50,000	Yes	\$536 MM	43
Peripheral Canal/Tunnel, CA	Uncertain	Yes	\$12 BB	37
Weber Siphon, WA	30,000	No	\$48 MM	< 2
Lewis and Clark Regional Water System, SD, IA, and MN	24,770	No	\$433.85 MM	337
Mississippi River/Ogallala Aquifer, various states	Unknown	Yes	Unknown	Unknown
Northern Integrated Supply Project, CO	40,000	No	\$490 MM	36 to 62
Uvalde County – San Antonio Pipeline Project, TX	40,000	Yes	\$250 MM	67 to 75

III. SUSTAINABILITY OF WATER SOURCES

Most previous pipeline projects have included large facilities—primarily surface storage projects—to capture and store water to be conveyed to end users. By contrast, most of the proposed pipeline projects summarized in this report are associated with far less abundant water sources than were water projects in the past.

Some of the proposed systems would carry water from groundwater basins that provide questionable long-term yield. Others would carry surface water from basins that are already undergoing severe water stress. For example, several of these projects would tap into the Colorado River and existing Colorado River Basin storage projects (e.g. Flaming Gorge and Lake Powell) that are in long-term decline. The proposed Mississippi River project is certainly a fundamentally different proposal from the rest of the projects located in the more arid West. That project, however, faces a wide range of additional challenges.

The fact that only three of the proposed projects presented in this report include new proposed surface storage facilities is primarily because of a realization that there is limited additional surface water yield to capture in the basins into which these projects would tap.

As the West pursues ever more distant sources of water, the issue of sustainability looms over the search for new water supplies. The landscape facing this new generation of water supply pipelines is fundamentally different from that facing water managers in the past. A century and a half ago, most pioneering western water leaders faced a largely undeveloped landscape and few competing uses of water. Today, that landscape has changed dramatically, leading to significant concerns regarding the extent and cost of additional water from western rivers and groundwater basins. Water projects can only generate reliable water supplies if they tap into reliable sources.

The sustainability of water supplies in the West should be confronted by policymakers in a far more focused fashion than it has to date. The *hot spots* for reliable supplies, such as Los Angeles, Las Vegas, and Phoenix, and other major metropolitan areas are well known, but medium, small, and

even rural areas are now confronting significant potential shortages of water. For example, Congress has just authorized hundreds of millions of dollars to deliver water to the sparsely populated Navajo reservation and for the small town of Gallup, New Mexico. (This project was authorized to resolve Indian water rights claims, which raises different issues from other federally funded projects.)

Meeting water needs is challenged by population growth, groundwater mining, competing demands for water from different sectors, ecosystem degradation, and increasingly from the effects of climate change. There is increasing evidence that water use across much of the West, particularly the Southwest, is significantly out of balance. Our review found that many factors affecting long-term reliability have been overlooked, or not analyzed in sufficient detail. This chapter summarizes a broad range of issues that affect the sustainability of water from proposed pipeline projects.

A. RELIABILITY OF SURFACE WATER SOURCES

Many surface water sources in the West are under severe stress as a result of existing uses. Because the entire flow of the Colorado and the Rio Grande Rivers are captured upstream, these large rivers often run dry before they reach the sea. As a result, there is no remaining “new” water to be captured in these systems.

Indeed, existing supplies are predicted to decline over time. For example, BOR recently determined that the long-term average supply in the Colorado River Basin is less than recent average water use.¹ As discussed later, this imbalance is projected to increase in the future. As indicated by table B, recently proposed new pipeline projects represent a

total additional potential demand of more than 690,000 af annually on the Colorado River. (These are not the only proposals that would increase diversions from the Colorado River Basin. Two other water development projects in Colorado that do not involve new pipelines, the Windy Gap Firming Project and the Moffatt Collection System Project, would further increase transbasin diversions by 33,000 af and 18,000 af per year, respectively.)²

Because there is no “new” water to capture in the Colorado River Basin, surface-storage projects would not increase the net amount of water available for use. As a result, in the short-term, these additional proposed Colorado River Basin diversions would likely result in further reductions of stored water in a basin that has faced a dramatic reduction in storage over the past decade. In the long-term, such projects may increase the pressure on the supplies currently used by others. Simply put, where there is no available new supply, the water diverted by new projects must come from somewhere. This issue is perhaps most clear in the Colorado River Basin, but it could be a challenge facing proposed projects in other basins.

B. GROUNDWATER MINING

Aquifers are used by many cities in the United States and represent the source for about 20 percent of the nation's fresh water withdrawals.³ Groundwater has allowed the growth of western cities and enabled agriculture in areas far removed from available surface waters. But, in the arid West, many aquifers are being mined, and as they are drawn down, current users will join those looking for alternative water supplies. For example, in the past 50 years, California's Tulare Lake Basin has suffered from more than 60 million

af of cumulative overdraft.⁴ Additionally, the Ogallala Aquifer, which extends northward from Western Texas to South Dakota, is in a state of overdraft. The aquifer could be depleted in only a few decades if withdrawals continue unabated.⁵

The U.S. Geologic Survey (USGS) has determined that declining groundwater levels is a widespread phenomenon around the nation.⁶ As shown in figure 2 and explained in table B, the Cadiz Valley project proposes to extract up to 50,000 afy—ten times one estimate of long-term recharge. The Las Vegas pipeline would also lead to long-term declines in groundwater elevations.

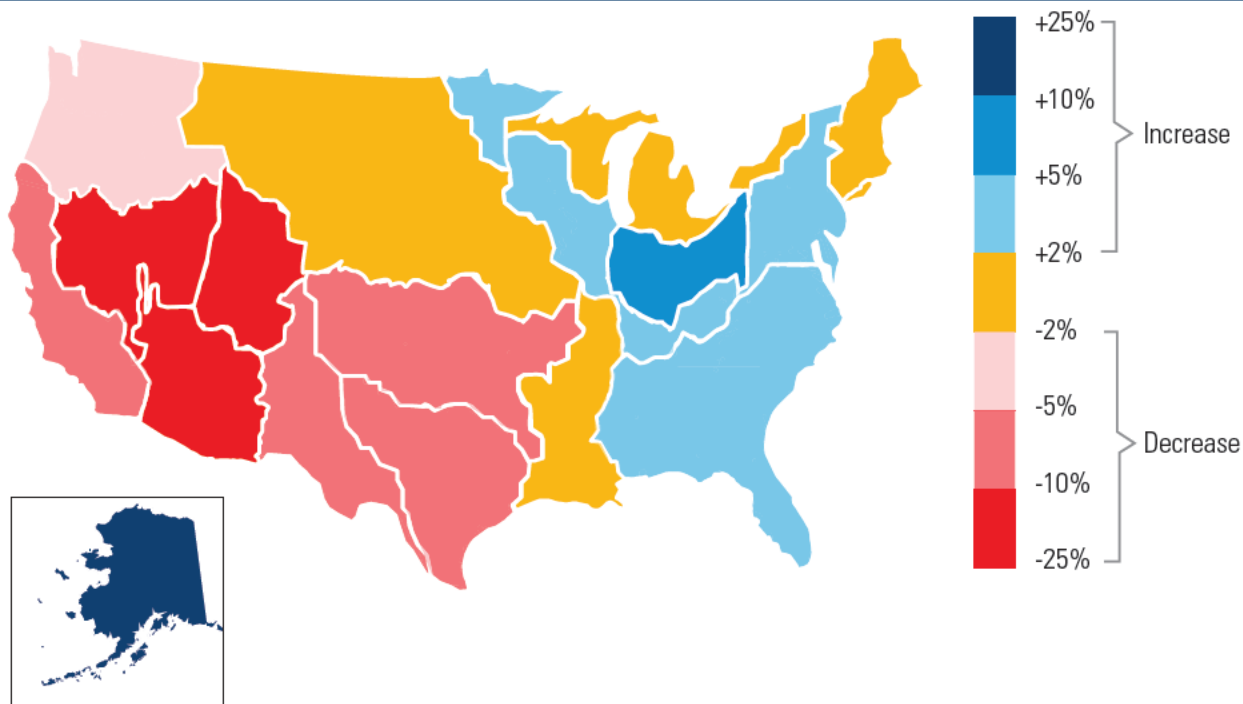
If proposed pipeline projects tap into groundwater in an unsustainable manner, these projects could lead to increased water usage, followed by an inevitable reduction in supply. Thus, these projects could increase future water shortages.

This trend toward transbasin projects that rely on groundwater represents a reversal of an historic pattern of development. Projects like the Central Arizona Project, the Central Valley Project, and California's State Water Project were designed in part to provide surface water to replace unsustainable groundwater pumping. Today, as those surface sources begin to hit limits, some proposed pipeline projects are turning back to groundwater sources.

C. CLIMATE CHANGE

Climate change will have a range of impacts on water supplies in the West. Higher temperatures will increase losses of water through increased evaporation and transpiration, which will affect agricultural irrigation and urban landscapes, particularly where turfgrass is prevalent. In both cases, increased temperatures will increase water demands,

Figure 3: U.S. Climate Change Science Program Projections for Reductions in Flows By Mid Century



unless there are changes in current management practices. Changes in precipitation patterns and, in some locations, total precipitation, are also expected to reduce available water supplies in much of the West.⁷ Climate change could also result in more frequent prolonged dry periods and severe droughts. This could lead to increased challenges for agriculture, which is the largest consumer of water, and also for municipal, industrial and other uses.

Additionally, unless current practices change, industrial cooling could require increased water quantities due to increased atmospheric and water temperatures.⁸

The U.S. Climate Change Science Program (USCCSP) has projected that the Colorado River Basin is likely to face a decline in runoff of -10 to -25 percent by mid-century as a result of climate change impacts (see figure 3).⁹ The BOR has adopted a relatively conservative approach, projecting a 9 percent decline in water availability by mid-century (see figure 4).¹⁰

The BOR has concluded recently that, by mid century, the Colorado River may suffer a shortfall of 3.5 million acre feet (maf) or more annually “particularly when considering potential changes in climate.”¹¹ This trend of increasing demand and decreasing supply in the Colorado River Basin is shown in figure 4.

These potential climate change effects extend across much of the West. According to an analysis undertaken for NRDC, more than 1,000 counties—one-third of the counties in the nation—are likely to suffer from high to extreme water stress,

when considering the results of climate change. Another 1,100 counties were predicted to suffer from moderate water stress. These counties include much of the West (see figure 5).¹² Finally, climate change may reduce water availability in groundwater basins in parts of the West.¹³

In short, climate change may decrease the potential water available from both surface and groundwater sources in the West. Each of the proposed projects discussed here is at a different stage in development. Nonetheless, the treatment of the challenges posed by climate change for these projects was mixed and, in general, lacked detail and adequate analysis.

Several of these documents simply mention that climate change could have an impact on the project, without further analysis. For example:

- **Lake Powell Project:** The draft climate change study for this project noted future water shortages are expected due to climate change.¹⁴ Specifically, the analysis concluded that “Additional potential future curtailments (due to climate change) could affect deliveries through the Lake Powell Pipeline.” The analysis also concluded that the “intake would be designed at an elevation which would be physically capable of receiving water in times of low storage.”¹⁵ NGOs have criticized the treatment of climate change in the Draft Environmental Impact Statement (DEIA).¹⁶ The document does not quantify potential reductions in available water supplies.
- **Ute Lake:** The BOR’s analysis for the Ute Lake project

Figure 4: Future Potential Colorado River Basin Shortages Projected by the U.S. Bureau of Reclamation Colorado River Basin Study

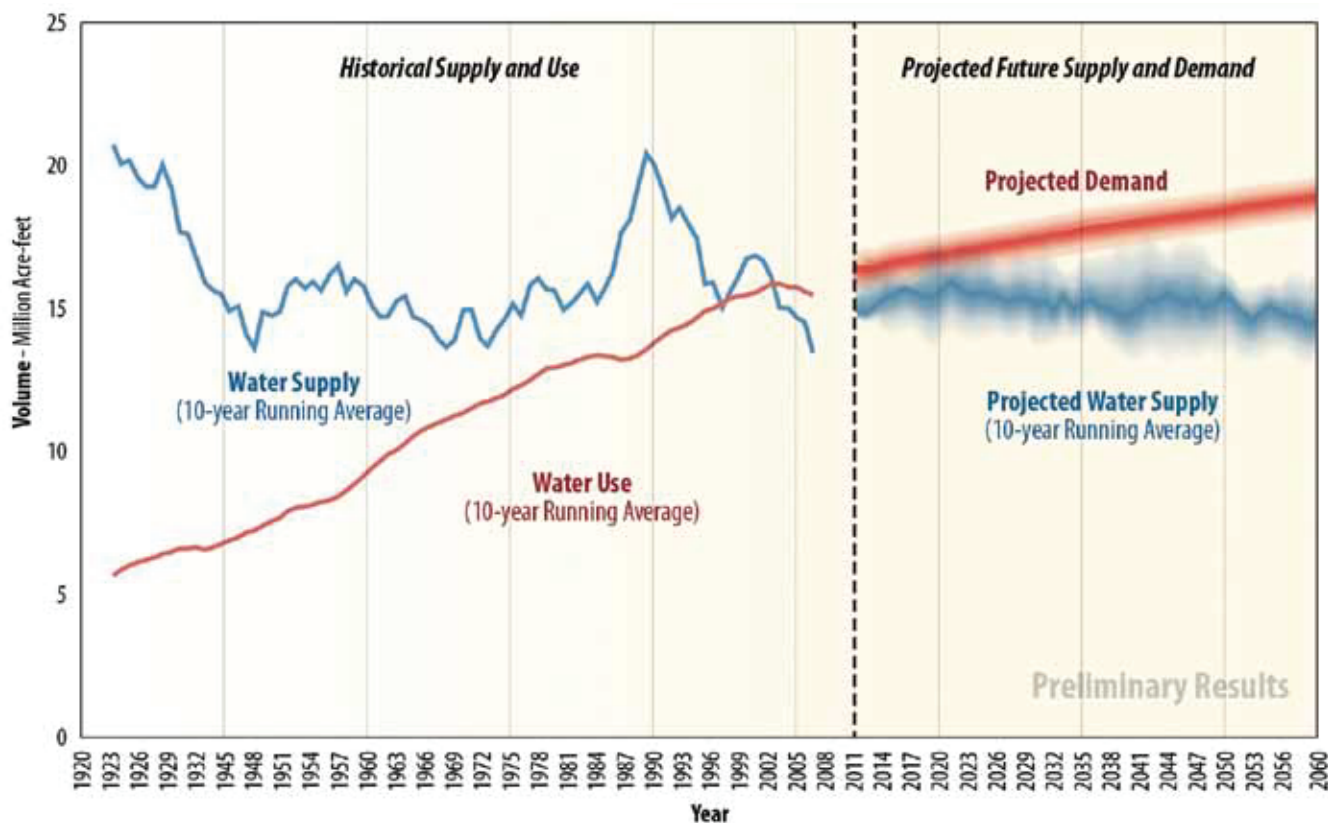
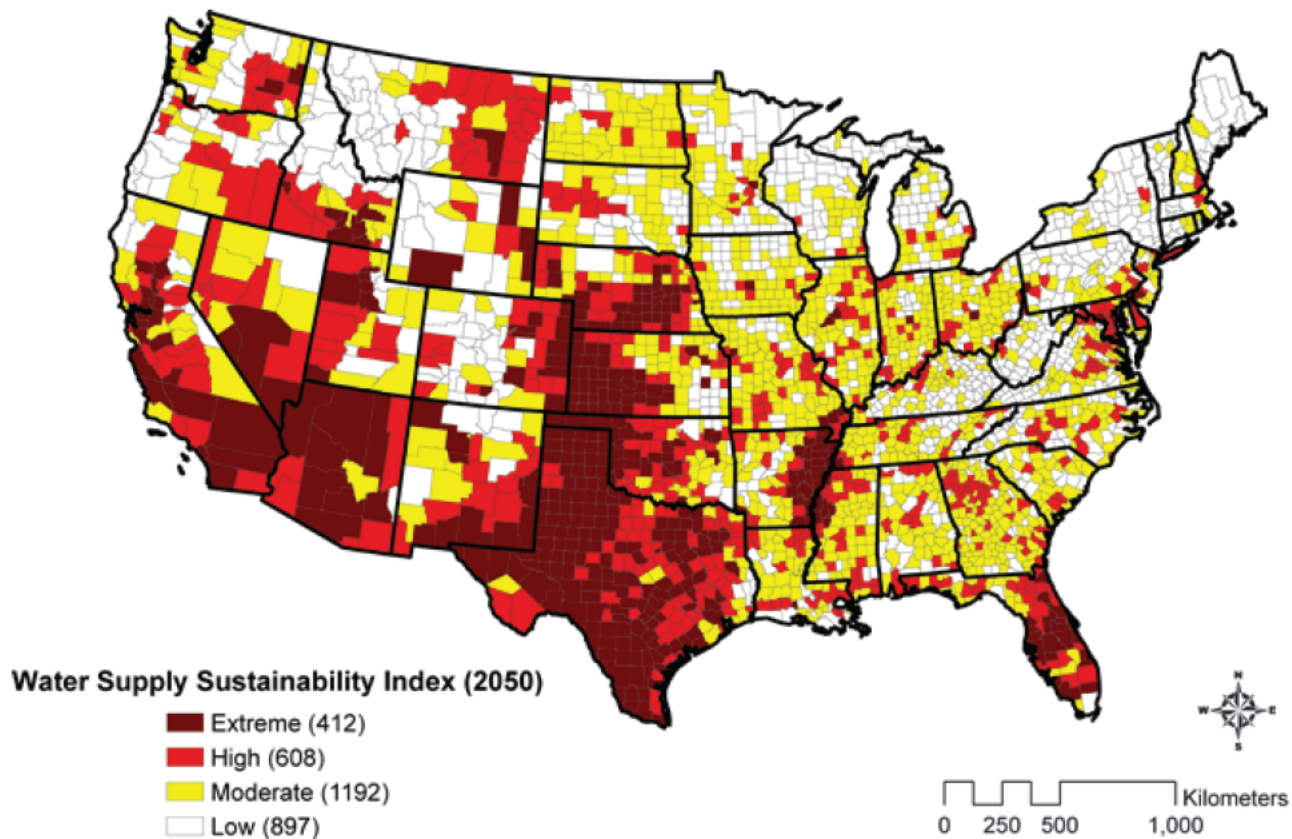


Figure 5: Water Supply Sustainability Index at the County Level (2050), including Climate Change Impacts



inexplicably concluded that climate change would lead to additional precipitation in the region.¹⁷ This conclusion runs contrary to the bulk of scientific studies of the likely effect of climate change on the southwestern United States, such as the USCCSP, which projected a 5 to 10 percent reduction in runoff in this region (see figure 4).

- **Cadiz Valley Project:** This draft Environmental Impact Report mentions climate change, cites the study (discussed earlier) prepared for NRDC by TetraTech, and concludes that local runoff could be reduced.¹⁸ The document does not quantify this potential impact.
- **Narrows Project:** The BOR draft Environmental Impact Statement (EIS) does not discuss the availability of additional water in the Colorado River Basin, nor does it cite any of the many studies that have concluded that climate change is likely to significantly reduce the availability of water in the Colorado River Basin. Instead, following a generic discussion of possible climate-induced impacts, the document states that:

“Reclamation has undertaken steps to model the effects of climate change on water delivery systems on a regional basis and for its larger reservoirs, such as Lake Powell and Flaming Gorge Reservoir. To date, however, models have not been developed with sufficient detail or sensitivity to capture small projects such as the proposed Narrows Project.”¹⁹

Several of the projects analyzed include only a brief summary of the range of impacts suggested by different climate models. For example:

- **Navajo-Gallup:** The Final EIS for this project states that, as a result of climate change:

“The impact to total runoff to the San Juan River is expected to be from -38 percent to +8 percent. These changes would reduce the available water supply and affect the ability of the system to meet the Flow Requirements promulgated by the SJRBIP. However the changes are sufficiently complex that an estimation of the impact on Flow Recommendations is not possible for a detailed analysis.”²⁰

This discussion includes a broad range of possible climate change impacts on flow. However, as in the case of the Ute Lake project, this discussion does not reflect the scientific consensus regarding the likelihood of a reduction in total instream flows in this region.

- **Las Vegas Pipeline:** The DEIS includes a significant discussion of climate change and potential impacts on regional hydrology and water available for the project. However, the document concludes that:

“(T)here is insufficient information available to predict how changes in climate would affect the rate of groundwater recharge in the region. Because of the uncertainties regarding

potential effects of climate change on the groundwater flow system, it was not possible to provide a reasonable or meaningful simulation of the combined effects of pumping and climate change on water resources.”²¹

Thus, the DEIS mentions the potential impact of climate change on existing Southern Nevada Water Authority supplies, but does not quantify the potential impacts of climate change on the water available in the groundwater basins from which the proposed project would pump.

Only the analysis for the Peripheral Canal included quantified estimates of impacts on water availability for the proposed project. The Bay-Delta Conservation Plan (BDCP), which is analyzing a complex project (described in Appendix B), including a large proposed tunnel, recently released an administrative draft Effects Analysis (EA) that includes a significant investigation of the likely impacts of climate change on the Bay-Delta system.²² These impacts include a general drying trend, changes in the mix of rain and snowpack, sea level rise, and increased temperatures. The administrative draft EA includes significant quantified reductions in future water yields from the preliminary proposed project as the result of climate change impacts, including changes in hydrology and sea level rise. This analysis has been greatly facilitated by California’s extensive adaptation planning on climate issues. A more detailed appendix on potential climate change impacts is expected to be released by BDCP in the near future.

Predicting the likely impacts of climate change on water supply availability is more difficult in some parts of the West. Even in these areas, however, projects can address this risk—by analyzing a range of scenarios, presenting the bulk of the conclusions of scientific analyses, and analyzing the relative confidence of estimates from the scientific community regarding impacts on water availability.

Given the cost of these projects and their importance to the future of communities planning them, the stakes are high. Constructing new pipelines that rely on unreliable water sources could have significant long-term risks.

D. STATE LEVEL CLIMATE AND WATER ADAPTATION PLANNING

In April of 2012, NRDC released a report, *Ready or Not: An Evaluation of State Climate and Water Preparedness Planning*, which evaluates the efforts of all 50 states to prepare adaptation strategies to address the likely impacts of climate change on water resources. The report includes four preparedness categories to compare progress made among states. Those categories include states that have undertaken comprehensive adaptation planning, states with fragmented adaptation planning, states with limited adaptation efforts and those with no adaptation planning. Of the 17 western states, the report concludes that only three—California, Oregon, and Washington—are among the nation’s most prepared states, and adaptation planning efforts have stalled in some areas in one of those states (Oregon).²³ On the other

hand, 13 western states fall into the last two categories—states that have done nothing or very little to prepare for water-related climate impacts. Those states include Arizona, Kansas, Idaho, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Utah, and Wyoming. It is noteworthy that most of the states in the Interior West, where the impacts of climate on water supply may be most profound, have done little to prepare. Indeed, five of the seven Colorado River Basin states are identified among the states in the last two categories.

Comprehensive state adaptation planning addresses a broad range of the potential impacts of a warming climate on aquatic ecosystems, water supply, and other water resources. Many of those issues are central to the evaluation of proposed pipeline projects. Clearly, addressing all of those issues comprehensively at the project level is more difficult without a broad state-wide adaptation framework. Thus, the lack of adaptation planning in most western states makes it more difficult to adequately evaluate the climate issues related to proposed new conveyance projects.

E. WATER USER IMPACTS

There are several ways in which poorly conceived pipeline projects could affect water users. First, in fully-appropriated river systems, additional diversions will increase pressure on existing water users. This risk is very clear today on some river systems, such as the Colorado. Second, using groundwater from mined basins to support new urban growth is a recipe for a future crisis; by definition a mined basin will not provide a secure water supply. In California, which lacks state-wide groundwater management, and in other states with less than fully protective groundwater management, such additional pumping could threaten existing water users. And third, water users who would rely on poorly conceived pipeline projects could face unreliable supplies and future cost increases.

F. BIODIVERSITY

The declining health of aquatic ecosystems highlights the need to protect remaining functioning ecosystems and to restore rivers. Especially in the western United States, wildlife species rely heavily upon aquatic habitats. For example, in New Mexico, waterways comprise less than 2 percent of the landscape, but are critical to a significant number of wildlife species.²⁴

- Fifty-five percent of all wildlife species and 75 percent of all vertebrates depend on waterways for survival.
- Eighty percent of all sensitive and specially classified species (State or Federal threatened and endangered listed species) rely on waterways at some point in their life cycle.
- Desert riparian ecosystems have the highest density of breeding birds in North America, with at least 400 different bird species observed.

The decline of aquatic-dependent species is partly or wholly due to low-flow conditions in many river systems. In river systems such as the Rio Grande, Colorado, Klamath, Owens, San Francisco Bay-Delta, and many others, increasing municipal and agricultural diversions have led to significant ecosystem impacts. Proposed projects that would increase diversions from already imperiled ecosystems should carefully examine likely current and future constraints to protect aquatic ecosystems. Poorly planned projects could cause additional impacts on already degraded ecosystems, such as the San Francisco Bay-Delta. Such supplies could also prove to be unreliable in the long-term because of the likelihood of additional future regulatory constraints.



This growth is forecasted to continue through the 21st century, with Nevada's population projected to increase 23 percent by 2030, Colorado's population projected to increase by 55 percent by 2040, Arizona's population to increase nearly 100 percent by 2050, and Utah's population to increase by over 110 percent by 2050.²⁸ California's population is also projected to increase 60 percent by 2050.²⁹ Pressure will continue to grow for reliable water supplies for municipal and industrial uses as western states become more and more populated.

The long-term consequences of the current economic slow-down may be different across the West. Some regions may experience lower growth than in recent decades. In these areas past estimates of future growth and water demand may be inaccurate and in need of revision. Other regions may recover more rapidly and return to rapid growth rates.

TRANSBASIN DIVERSIONS

Many of the existing and proposed projects described in this report involve or would involve transbasin diversions, which move water across hydrologic basins. Transbasin diversions are an ongoing source of conflict in western water policy. A community that loses significant water supplies can face a constrained future and the bitter political divisions over existing transbasin diversions reflect that understanding.

Before legislatures and courts gave a voice to smaller communities, their opposition may not have been viewed as significant by project proponents, but circumstances have changed. Even the relatively small pipeline from a rural area on the Pecos River to Santa Fe, New Mexico is being opposed by citizens in the area of origin.³⁰ As water resources become more constrained across the West, conflict around transbasin diversions can be expected to increase, and will likely have important implications for potential investments in this kind of traditional water development.

Some pipeline projects that transport water to distant users rely on rights that are relatively junior in seniority, yet also supply urban water uses that can be less flexible than agricultural uses. Thus, new transbasin diversion projects may present a rising number of significant challenges, as they increase reliance on imported water, increase the challenges involved in bringing river and groundwater basins into balance and increase the vulnerability of western communities and economies.



Rio Grande at Big Bend National Park, Texas

G. POPULATION GROWTH IN THE WEST

The western United States has grown at an explosive rate over the last two decades. In the 1990's the population of the western United States grew by 19.7 percent, and an additional 13.7 percent in the 2000.²⁵ The growth has primarily occurred in what have been dubbed "urban archipelagos," such as Denver, Boise, Albuquerque, Las Vegas, Phoenix, and Tucson. In the past decade, large metropolitan areas have grown at more than twice the rate of "micro" areas (those with an urban area population between 10,000 and 50,000 residents).²⁶

- In the 2000s, the Las Vegas metropolitan area accounted for 72 percent of Nevada's 2010 population and 82 percent of the state's growth. Nevada led state population growth in both decades at 66 percent in the 1990s and then 35 percent in the 2000s.
- Arizona was second in state population growth, coming in at 40 percent and 25 percent in the 1990s and 2000s, respectively.
- Colorado ranked third, with 31 percent in the 1990s, and 17 percent in the 2000s; and Utah saw growth of 30 percent and 24 percent during these decades.²⁷

IV. POTENTIAL ALTERNATIVES, INCLUDING WATER USE EFFICIENCY

The issues summarized in the previous chapter address the sustainability and cost of proposed pipeline projects that would rely on surface and groundwater sources. Increasingly, alternative approaches, particularly water use efficiency, may provide more reliable and cost-effective strategies to meet future water supply needs. In designing water supply solutions, a range of actions should be considered, with a focus on the most affordable, effective solutions.¹ As water managers evaluate ways to meet new needs, they should consider adopting a “least cost first” approach to water supply investments, similar in concept to California’s energy loading order.² Such a loading order approach focuses agency investments on the most cost-effective and environmentally preferable solutions before turning to investments that are less cost-effective and more environmentally damaging.

Analysis of the projects presented in this paper revealed that most had very limited analysis of efficiency as a project alternative or component. For instance, curiously, water conservation, as an alternative to the Cadiz Valley groundwater pumping project, was rejected because the region to be served by the project is already aggressively pursuing conservation measures.³ Analysis of the project ignored the fact that some Southern California water agencies are planning major additional investments in conservation and other tools—and that additional cost-effective investments are possible.⁴ Other examples of poor or inadequate analysis or consideration of water efficiency alternatives include:

- **Navajo-Gallup:** Analysis for this project concluded that water use levels were already so low (110 gallons per capita per day [gpcd] where piped water is available and 10 to 20 gpcd where water is hauled, among the lowest levels in the southwest), that efforts to further increase conservation and efficiency were simply unachievable.⁵ The analysis did not include an evaluation of agricultural water conservation alternatives.

- **The Lake Powell Pipeline:** The alternatives analysis for the Lake Powell Pipeline included a very limited analysis of conservation potential, despite per capita water use as high as 430 gallons per capita per day.⁶
- **Narrows Project:** The DEIS for the project states that 270 gallons per capita per day are “required” for Sanpete County, Utah.⁷ This level of per capita usage is assumed to remain unchanged, and that the region will see a 3 percent annual population growth rate until 2050.⁸ The discussion of alternatives includes a modest discussion of agricultural water conservation and no discussion of opportunities to reduce per capita water use in the M and I sector, despite very high per capita water use.⁹

Perhaps most striking of all of the project analyses reviewed for this report is that for the Peripheral Canal; the current evaluation of alternatives to canal project does not include an analysis of water use efficiency, water recycling, or other tools as alternatives to be considered.

Only the Southern Delivery System included significant analysis of conservation alternatives. All alternatives evaluated for this project include a conservation component,



Irrigation system in turnip field

perhaps in recognition that water resources in Colorado are already heavily tapped.¹⁰

The growing importance of efficiency was highlighted by the National Research Council, which determined that the potential for new surface storage in the Colorado River basin is “limited,” and that “(d) eclining prospects for traditional water supply projects are perhaps more correctly seen not as an end to “water projects” but as part of a shift toward nontraditional means for enhancing water supplies and better managing water demands.”¹¹ Overall, water management is transitioning from traditional water development to a focus on improving water use efficiency.

A. AGRICULTURAL EFFICIENCY

In the West, agriculture continues to be the dominant consumer of water, continuing patterns that were established many decades ago. Increasing agricultural water efficiency can be achieved by modernizing farming techniques, including:

- Weather-based irrigation scheduling that uses local weather information to determine the amount of water needed
- Regulated deficit irrigation (inducing water stress in crops with drought-tolerant life stages, sometimes increasing crop quality while reducing irrigation amounts)
- Switching from gravity or flood irrigation to sprinkler or drip irrigation systems
- Switching to less water intensive crops

The Pacific Institute has estimated that these strategies can result in annual savings of nearly 700,000 af in California.¹² These and other management tools could reduce agricultural water demands across the West and could improve the sustainability of the agricultural economy. These savings also could provide for dry-year or permanent transfers to urban water users and the environment. In some areas, long-term or dry-year fallowing can also provide water for other

uses, through voluntary transfers. Implementing efficiency measures could also result in significant savings by avoiding the cost of additional water development.

B. URBAN WATER USE EFFICIENCY

Many studies have documented the potential water savings from investments in urban efficiency. Improvements can be achieved by:

- Upgrading homes that have old, inefficient devices to higher efficiency fixtures (low-flow toilets and showerheads, aerating faucets, and low-use appliances)
- Alterations in commercial/industrial water use (installation of water efficient devices)
- Conversion of lawns and gardens to xeriscaping
- Residential metering and sub-metering
- Leak detection
- Rate structures that better communicate and capture the value of water (e.g., block rate pricing wherein lower rates are charged for low to moderate use, creating a direct and immediate economic incentive for conservation)

Applying these efficiencies in California alone has been estimated to result in water savings of 320,000 af per year, 2,300 GWh electricity savings per year, and 86.8 million therms of natural gas savings per year.¹³

One obvious efficiency to be gained is in fixing leaks in delivery systems. According to the Congressional Budget Office, many drinking water systems lose as much as 20 percent of treated drinking water each year due to leaks in piping networks.¹⁴ One summary of the failing infrastructure for water delivery and treatment systems reports that an estimated 50 major main breaks and 500 stoppages occur for every 1,000 miles of pipe each year, amounting to an estimated 50,000 breaks and 500,000 stoppages annually in the U.S.¹⁵ In 2009, Southern California Edison submitted a report to the California Public Utility Commission with an estimate of the potential water supply benefits of leak reduction in California.¹⁶ The report estimated that 870,000 af is lost annually to leaks, and that 350,000 af could be cost-effectively recovered through leak reduction efforts.

Urban efficiency can also be increased through Low Impact Development (LID, or green infrastructure) to mimic natural infiltration systems by capturing and reusing stormwater runoff.¹⁷ Runoff diversion and capture prior to discharge to surface waters can be used either to replenish groundwater supplies through infiltration or for gray water uses, like landscape irrigation and toilet flushing. NRDC has estimated that more than 400,000 af of water could be developed through LID investments in California by 2030.¹⁸ In California, most runoff from urban areas is discharged into the ocean. In the Interior West, the capture of rainwater is being recognized as a useful conservation practice, despite some concerns. In Colorado and Utah, legislation was passed in 2009 making it legal for homeowners to capture rainwater.¹⁹

Wastewater recycling and reuse is another method to reduce the use of imported water. Recycled water is a viable alternative to imported water for uses that range from irrigating golf courses, parks, and crops, to recharging groundwater, mixing concrete, and even to firefighting. The National Research Council recently released a report that carefully endorses recycling of wastewater, noting the many cities where it is now practiced.²⁰ The California Department of Water Resources has estimated that 0.9 to 1.4 million af of recycled water could be developed in California by 2030.²¹ By way of comparison, the annual water use of the City of Los Angeles is less than 0.7 million af per year.



Garden sprinkler system

It is important to note that water recycling and low-impact development can reduce downstream flows. Therefore, their potential to produce “new” water varies across the West, with the greatest potential in areas where urban runoff and treated wastewater are discharged to the ocean.

The promise of traditional development may be more alluring to politicians and engineering firms, but experience over the past two decades has shown that efficiency and reuse is the low hanging fruit.

C. EXAMPLES OF THE BENEFITS OF WATER USE EFFICIENCY AND OTHER TOOLS

Across the West and the nation, there are many examples of successful water use efficiency programs. For example, the Pacific Institute has examined the water use of 100 municipal agencies that rely on Colorado River water and determined that, between 1990 and 2008, per capita water use in these agencies declined, on average, by 1 percent per year during this period. Per capita water use in some cities declined far more, including Albuquerque (38 percent reduction), Southern Nevada (31 percent), Phoenix (30 percent), and San Diego (29 percent). Twenty-eight of these agencies reduced their total water deliveries, despite increases in population.²² Additional examples across the nation include:²³

- **Goleta, California:** Future water shortages from population growth and an insufficient water source prompted Goleta to establish a water efficiency program that emphasized plumbing retrofits, including high-efficiency toilets, high-efficiency showerheads, and

increased rates. The program resulted in a 30 percent drop in total district water use, a 50 percent drop in per capita water use, and the city was able to delay a wastewater treatment plant expansion.²⁴

- **Seattle, Washington:** The 10-year goal of the Seattle Water Partnership, which was launched in 2000, is to reduce per capita consumption 1 percent year and achieve a total savings of 11 million gallons per day (33.75 af) by the end of 2010, at a total cost of \$55 million dollars.²⁵ By the end of 2010, the program had achieved cumulative savings of 9.56 mgd from residential, commercial and institutional customers at a cost of \$35 million—results that are more cost-effective than anticipated.
- **Orange County, California:** This community uses advanced treatment technologies to purify wastewater, then allows it to percolate into the groundwater basin for later use as potable water. The Groundwater Replenishment System facility, which cost \$481 million to build, is the largest water recycling facility in the world, producing 70 million gallons per day (214 af).²⁶ Orange County is planning to expand this project to 100 million gallons per day (306 af). This system uses approximately one-third the energy that would be required to desalinate seawater.²⁷

These examples demonstrate that investments in efficiency and other water supply tools are proven, cost-effective approaches to meeting water supply needs that should be evaluated as a part of planning for any proposed pipeline project.

D. GAINS IN WATER USE EFFICIENCIES TRANSLATE INTO IMPORTANT ENVIRONMENTAL BENEFITS

Most major rivers in the United States are stressed by the competing demands for hydroelectric and thermoelectric power generation, municipal use, recreation, mineral production, livestock, agriculture, and wildlife. In the western United States in particular, population growth and the dependence on freshwater withdrawals for those populations have resulted in a trend of increasing demands on increasingly stressed supplies.

Water use efficiencies can help ameliorate the stresses of overuse and curb further degradation of rivers in a number of ways.²⁸ For instance, by reducing runoff from agricultural lands, efficiency improvements can lessen pesticides, fertilizers, salts, and fine sediments from surface erosion that can contaminate surface and groundwater sources, increase treatment costs for downstream users, and degrade fish and wildlife habitat.

Water conservation can, under some circumstances, also increase the amount of water left in the stream—also referred to as instream flows, which are environmentally important for:²⁹

- Removing fine sediments that can cement river substrate and smother fish and invertebrate eggs and larvae
- Maintaining suitable levels of water temperature, dissolved oxygen, and water chemistry
- Establishing stream morphology, including the formation and maintenance of river bars and riffle-pool sequences
- Maintaining riparian communities, preventing riparian vegetation from invading the channel and altering stream form and function
- Flushing waste products and pollutants; and allowing and supporting fish passages and migrations

Investments in water use efficiency can also alter the timing of instream flow, contributing important environmental benefits. Although some withdrawn water may eventually flow back to a stream system via surface runoff or groundwater percolation, there is a lag time between when the water is withdrawn and when it flows back into the river. This timing can be important because the natural life cycles of many aquatic and riparian species are adapted to either avoid or exploit annual and seasonal variations in flows.

Finally, diversions from waterways can pose a direct threat to fish and wildlife populations. For example, large pumps for the California State Water Project and Central Valley Project have killed more than 110 million fish over the course of 15 years, included many threatened and endangered species, leading to expensive infrastructure retrofits, legal challenges, and controversial environmental restrictions on withdrawals.³⁰ Therefore, by compensating for lower diversion levels, water efficiency measures can benefit fish and wildlife.

It is important to note that all efficiency investments may not provide the above benefits. Increasing water use efficiency can reduce water use, leaving more water available to meet instream flow needs. However, wastewater reuse and increases in efficiency that increase consumptive use and reduce return flows can have the effect of reducing downstream flows. An affirmative program to protect instream flows is a necessary component of sustainable water management.

E. INCREASED WATER USE EFFICIENCY CAN RESULT IN ENERGY EFFICIENCY BENEFITS

Efficiencies gained in water use frequently result in efficiencies gained in energy use. This relationship is highlighted in a 2011 report by the U.S. Government Accountability Office (GAO), which evaluated energy efficiency reductions via improvements in the urban water lifecycle, from capture and pre-treatment to delivery, use, post-treatment, and discharge.³¹ The GAO report detailed gains to be made in the following areas:

- Process optimization (implementing monitoring and control systems, modifying pumping operations, and reconfiguring aeration systems)
- Infrastructure improvements (equipment upgrades, including right-sizing equipment, and improving maintenance and leak detection)
- Water conservation
- Better energy management, beginning with energy audits of treatment facilities
- Improved advanced treatment options to lessen energy-intensive processes such as ultraviolet disinfection
- Redesigning systems to better integrate drinking water, wastewater, and stormwater management
- Use of renewable energy in operations

California has also investigated the energy benefits of improvements in the water sector. As a result, the state has included energy and greenhouse gas reductions from the water sector in the state's greenhouse gas reduction strategy. In that plan, the California Air Resources Board concluded that the water sector can contribute 4.8 million metric tons of carbon dioxide (CO₂) emissions reduction by 2020, with 1.4 million metric tons of that reduction coming from water use efficiency, and 2.0 million metric tons coming from water system energy efficiency.³² The latter conclusion also suggests opportunities for water projects and water agencies to install system improvements, such as in-conduit hydropower facilities and efficient pumps to reduce energy consumption.

V. ENERGY USE—CONVENTIONAL AND RENEWABLES

The energy costs of capturing, storing, treating, and delivering water are very large. Pumping and treating water for industrial and urban uses consumes between 2 and 3 percent of the world's energy, and can cost up to half of a municipality's total operating budget in developing countries.¹ In the United States, one estimate is that upwards of 13 percent of the total energy consumption is water related.² Energy consumption for water delivery and wastewater treatment is typically 30 to 60 percent of U.S. city energy bills.³ The California Energy Commission has concluded that in California 19 percent of electricity use, 30 percent of non-power plant related natural gas, and 88 million gallons of diesel fuel are consumed annually for water related uses—including urban and agricultural water use and including the energy costs related to transportation of water, end use (the single largest factor) treatment and discharge.⁴



Long-distance water pipelines can consume large amounts of energy.

Credit: BOR

Pipelines frequently require substantial amounts of energy to pump and transport water to out-of-basin users. For example, in California, the State Water Project's electricity use represents the largest single consumer of electricity, amounting to 2 to 3 percent of the state's entire electricity consumption.

The use of energy to pump water great distances has another significant consequence that exacerbates the environmental consequences of pipelines. The production of conventional energy requires copious amounts of water. Energy and water are thus interrelated. Water use consumes significant amounts of energy. We use energy to access many water sources, and vice versa. For example, water is diverted for electricity production at dams for hydroelectric power generation, and to cool thermoelectric power plants, which represent the single largest source of water withdrawals in the United States.⁵ In addition, water is used in accessing some natural gas deposits and would be used in refining oil shale.⁶

Energy is also used to treat water for use to distribute it within a water district, heat it, and treat wastewater for disposal. If new water sources, such as saline waters, are tapped into, energy costs associated with treatment will rise. Advanced treatment, recharge, and reuse also have associated energy costs, although not necessarily higher than imported supplies. Developing technologies to reduce the energy costs of these processes is important, as is conserving water—the surest way to reduce energy use.

Analysis of the proposed pipeline projects covered in this paper reveal that despite the significant energy costs of water projects, many did not include a well-developed analysis of energy consumption. For example, the Ute Lake Pipeline Project effects analysis (EA) does not include a detailed discussion of the project's potential energy use. The document does include a discussion of the potential to include renewable energy facilities in the document. However, to date, the project applicants have chosen not to pursue renewable power facilities related to the project.

The DEIS for the Narrows Project does not include a discussion of the project's energy requirements.

The Cadiz Valley Project appears not to include total energy costs to reach end users. A draft EIR for the project was released in December of 2011.⁷ In it, the project is estimated to use 3,112 kWh/MG of water delivery (or 1,014 kWh/af).⁸ This number includes groundwater pumping and the energy required to pump water to the Colorado River Aqueduct (CRA). This total, however, does not include the energy cost to pump the water through the Colorado River Aqueduct to users in Southern California. The document acknowledges that the energy used by the CRA is significant—6.138 kWh/MG at full capacity.⁹ Water from the Cadiz project would not, however, be conveyed the full length of the CRA. The document does not quantify the amount of energy that would be required to convey water through part of the CRA to end users. The energy discussion in this document focuses primarily on comparing energy use by the proposed project to energy used by the State Water Project, one of the most energy intensive water projects in the nation. The document does not compare the proposed project's energy use to the many local water supply options in Southern California that

can consume a fraction of the energy used by the SWP.

A number of project documents, such as those for the Yampa River Pumpback and the Lake Powell Pipeline, include peak energy requirements,^{10, 11} rather than total annual energy requirements and per acre-foot energy requirements.¹² Only a few projects analyzed projected factors including total energy use, per acre-foot energy requirements and associated greenhouse gas emissions. And very few projects addressed all of these issues. The per-acre-foot energy requirement is particularly important to understand the potential for long-term fluctuations in water costs as a result of changes in electricity prices.

The Lewis and Clark Regional Water System is projected to use, at completion, 24.2 GWh/y.¹³ These energy numbers are derived from the project's Engineering Report analysis of operating costs, which does not summarize these energy demands, nor does it include a separate discussion of energy use. The project's federal Finding of No Significant Impact does not include an analysis of energy use.

Other projects that did not adequately analyze projected energy use include:

- **Northern Integrated Supply Project:** projected to result in an energy demand between 0.85 and 1.45 MWh/af.¹⁴
- **Southern Delivery System:** would require 4.63 MWh/af upon delivery. The energy required to meet 2046 water demands is projected to average 671 GWh per day, or 245 GWh per year.¹⁵ This per acre-foot energy requirement is approximately equivalent to the energy cost of desalinated seawater and approximately 50 percent more than the energy required to pump water from the Bay-Delta to Southern California.¹⁶ This system would demand the equivalent of the average daily per capita residential electricity use of over 12,500 Coloradans.¹⁷
- **Las Vegas Pipeline:** The June 2011 BLM DEIS prepared for the project indicates that the proposed pumping facilities will require the continuous use of 97.2 MW of power, including 51.9 MW for groundwater wells and associated facilities.¹⁸ Power for the project would be provided by the Silverhawk Generating Station, a natural gas-powered facility with a capacity of 520 MW, 25 percent of which is owned by SNWA. The DEIS concludes that this electrical generation will result in the release of 327,000 tons of carbon dioxide per year—equal to the emissions from the electricity use of 35,000 homes.¹⁹ The document adds that these energy requirements and greenhouse gas emissions may be reduced through the use of solar power and in-conduit generating turbines. These estimates do not include energy use per acre-foot.
- **Peripheral Canal:** The BDCP concluded recently that the preliminary proposed project (a 15,000 cfs tunnel project) would result in increased energy demands for pumping ranging from 2,027 to 2,319 GWh/y.²⁰ This compares with current net CVP energy use for water pumping of 814 GWh/y and SWP net energy use for pumping of 6,327 GWh/y. Thus, the project would represent nearly a one third increase in combined energy use.

The BDCP is pursuing a “dual conveyance” approach to pumping, in which some CVP and SWP water would be pumped through a new canal or tunnel, and other water would continue to be pumped from the existing CVP and SWP diversion points in the South Delta. As indicated above, water pumped through a new tunnel would require a significant amount of additional energy. This would add to the SWP’s already large energy footprint, particularly for Delta water delivered to Southern California.

Some of these projects have not yet moved to the environmental analysis stage, so the energy costs have not been considered. The Santa Fe-Pecos Pipeline, for example, would climb nearly 4,000 feet in elevation to reach its destination.²¹ This would be a lift double that of the California State Water Project’s 2,000 foot lift over the Techachapi Mountains—an extraordinarily energy-intensive water project.²²

The Mississippi River Project also has many options for water diversion, delivery and exchange from the Mississippi River. Nevertheless, pumping water to “mile high” Denver, one possible destination of a pipeline from the Mississippi, would include very high energy requirements. For example, the City of Omaha, which lies at the confluence of the Platte River and the Mississippi, lies 4,000 feet lower than Denver, at an elevation of 1,090 feet.

In short, many of these proposed projects would be very energy intensive. It is important to note that, in contrast, some water use efficiency alternatives can save significant amounts of energy.

A. THE FEDERAL GOVERNMENT’S ROLE IN THE ENERGY/WATER CONNECTION

The federal government currently does not compile information on energy use by water projects, except for the quantity of hydropower from BOR projects that is used to deliver federal water. There is limited information on current and proposed projects concerning the substantial amount of energy consumed by these facilities.

As discussed earlier, some pipeline projects require large amounts of energy. The use of fossil fuels to provide this energy could increase greenhouse gas emissions, contributing to the very warming that threatens western water supplies. President Obama ordered federal agencies to create inventories of their greenhouse gas emissions under Executive Order 13514 (October 5, 2009) and the Guidance on Federal Greenhouse Gases Accounting and Reporting (October 6, 2010). However the Department of Interior has not included in its inventory the greenhouse gas emissions that result from its water facilities or the projects that the BOR funds.²³

The federal government is also required by the National Environmental Policy Act (NEPA) to provide environmental reviews of major federal actions that significantly affect the quality of the environment. Unfortunately this NEPA review is sometimes not sufficiently probing, with respect to water alternatives or the use of renewable energy to power

conventional facilities. For example, the Navajo-Gallup EIS does not include the use of renewable energy in its list of alternatives.

B. RENEWABLES AND WATER PROJECT ENERGY USE

Pumping and moving water is very energy intensive and using renewable sources to provide at least some of the energy would be beneficial. Much of the western United States receives abundant sunshine and wind. As a result, the West has significant potential for the development of renewable energy sources, which significantly reduce greenhouse gas emissions. However, renewable energy projects must be carefully designed and selected. It is important to note that solar technologies have very different water requirements. For example, dry-cooled thermoelectric solar can require some make up water for boiler systems and water to wash heliostats. However, wet-cooled solar has dramatically greater water requirements. As a result, the California Energy Commission has adopted a policy that represents a de facto prohibition on wet cooling for solar facilities in California’s desert regions, except in very limited circumstances.²⁴ In addition, large-scale wind, solar, and transmission facilities must be cited carefully to avoid environmental impacts.²⁵

When determining whether wind or solar energy should be used, cost may be a controlling factor. In 2009, renewable energy accounted for 8 percent of total U.S. energy consumption. Of that percentage, only 9 percent was from wind, and 1 percent was from solar energy (the remainder is provided by hydropower, biomass, and geothermal sources).²⁶ Although wind energy accounts for more energy production than solar in the United States, solar energy technology is improving rapidly. Large scale solar adoption is becoming more feasible all of the time.²⁷

Renewable energy sources, such as photovoltaic solar, wind, and in-conduit hydropower to help power water projects are increasingly being pursued across the world. A few examples include:

- California water agencies, currently the largest customer group for solar installations, with 20 MW of generation currently in operation or under construction, and nearly 50 MW in the proposal stage.²⁸
- The Palmdale, California Water District, which uses a 950 kW wind turbine at its water treatment facility, providing the majority of the energy required for operation of the facility. The district has installed a solar array system at its shop facilities buildings to offset power costs.²⁹
- The Las Vegas Valley Water District, operating solar photovoltaic systems at six reservoirs and pumping station sites since June 2007, with a combined capacity of 3.1 MW. The system cost \$23.4 million to build and is being paid back through annual energy savings of approximately \$725,000 and through the sale of renewable energy credits to local electric utilities,



The Los Angeles aqueduct, unlike most proposed projects, does not require energy for pumping.

yielding a payback period of 11.6 years for a system with a projected lifetime of 35 years.³⁰

- The largest seawater desalination project in the Southern Hemisphere, which opened in 2006 in Perth, Australia, with a daily capacity of 140,000 cubic meters. The facility is powered by energy from a wind farm, making the facility the largest desalination project in the world whose energy needs are provided by renewable energy sources.³¹

C. RENEWABLES, STORAGE, AND GRID INTEGRATION

It is important to note that many renewable energy sources (e.g., wind and solar) are not continuous. Combining these two sources could help some water agencies use renewable power to meet water pumping needs. In either case, it could be useful to have the ability to store renewable power for later use. The primary technology to achieve this end is pumped storage.

Some existing water projects have utilized pumped storage projects, which have traditionally been designed to allow water projects to generate and sell power during peak demand periods and pump water from a lower reservoir to a higher one when power is less expensive. Such projects could be designed to smooth out the peaks in wind and solar power

production, for example by pumping water during daylight hours and periods of high winds. When energy is needed during times of high demand, water in the higher elevation reservoir would be released to generate electricity.

California's State Water Project, for example, includes one of the largest pumped storage projects in the nation, combining Pyramid Lake (1,495 MW) and Castaic Lake.³² Few new pumped storage facilities have been built since the 1990s, but with the recent increased focus on renewable energy sources, pumped storage is again being pursued. For example, permitting for three new systems is underway in Oregon, the largest of which will have a 500 MW capacity and storage potential of 16,000 MWh.³³ Similar projects are being evaluated in California, Wyoming, Hawaii, and elsewhere.³⁴ Other newer technologies are emerging to store energy from renewables, including the use of compressed air, molten salt, concrete and ice.³⁵

The use of renewable power or pumped storage should not be used as justification for unsustainable or un-economic water projects. However, existing water pipelines and future pipeline projects should be designed to include renewable power as a source. For example, California's State Water Project consumes approximately 1.4 billion kWh annually from a coal-fired plant in Nevada that it partially owns. This power can and should be replaced with renewable sources.

VI. THE ROLE OF FEDERAL AGENCIES

Federal agencies, including the BOR and the Corps of Engineers, have long played a central role in the planning and development of water projects. In addition to the role of federal agencies in issuing permits and in energy issues (discussed in Chapter V), several current federal activities have important implications for proposed pipeline projects.

A. FEDERAL PRINCIPLES AND GUIDELINES

In December of 2009, the White House CEQ issued the Proposed National Objectives, Principles and Standards for Water and Related Resources Implementation Studies. These Principles and Guidelines were first adopted in 1973. They serve as the foundation of federal water planning efforts, and have been largely unchanged for more than 25 years.¹ The original Principles and Guidelines guide the work of the BOR, the U.S. Army Corps of Engineers, the Natural Resources Conservation Service, and the Tennessee Valley Authority. However, the revised draft document is expanded in scope and is intended to cover all federal agencies that undertake water resource projects.

The Principles and Guidelines document does not yet address the full range of issues related to potential federal involvement in proposed water pipeline projects. For example, the draft Principles and Guidelines document does not use the word “energy” once. It does, however, list some of its goals as to “protect and restore...the environment while encouraging sustainable economic development” and to avoid “adverse impacts to natural ecosystems wherever possible and fully mitigating any unavoidable impacts.”² The incorporation of the changing western water landscape and the issues discussed in this report would provide valuable guidance for federal agencies that evaluate and fund water projects, including the BOR. Modernized Principles and Guidelines should guide federal agency involvement in all types of water projects, including proposed pipeline projects.

B. FEDERAL FINANCING

With the high cost and diminished yield of traditional water development, alternative water supply strategies are increasingly cost-effective, including water recycling, improved groundwater management, urban stormwater capture and particularly urban and agricultural water use efficiency.³ Many of these projects are now more cost effective than some traditional water development projects. There is no single rule governing how much the federal government will contribute to states and local governments to assist in the financing of pipeline projects, or for other means of providing water. There has been an assumption among many state and local leaders that the federal government will be involved in some fashion in large scale water projects, although this funding may be ad hoc. For example, the federal government is committed to funding 75 percent of the Ute Lake Project in eastern New Mexico, while the state government and involved communities are each contributing 15 percent and 10 percent, respectively.⁴ The basis for federal involvement is unclear; there are no tribal water interests in the area. In many other areas, federal funding involvement is at substantially lower levels.

In the past, the federal government (through the Bureau of Reclamation and the Corps of Engineers) has devoted tens of billions of dollars to highly-subsidized water storage projects. As a result of declining water availability, environmental degradation and dramatically escalating costs, most people agree that the 20th century dam building era is drawing to a close. For example, in the Colorado River Basin, that era may

have reached an end with the construction of the Animas La Plata project in the Upper Basin and the Drop 2 Reservoir on the Lower Colorado. Through the Bureau of Reclamation's Title XVI program and water conservation programs, the Bureau has begun moving away from its traditional role as a dam-builder. Given the water challenges facing the West, the Bureau's role is likely to increasingly focus on efficiency and reuse strategies.

Alternative water solutions, such as water use efficiency, may prove to be more reliable over the long-run, less likely to contribute to future water conflicts, less environmentally damaging and more cost-effective. However, because the Bureau does not provide such generous financing for water use efficiency and other solutions, the federal government's current financing policies are encouraging more damaging, expensive and unreliable solutions. If continued, this practice is likely to encourage additional proposals for pipeline projects around the West. Over the long-term, by encouraging what may prove to be unsustainable sources, this federal funding could increase future water shortages.

Many proposed projects lack a clear nexus to strong federal interests to justify funding from federal taxpayers. Such connections include resolving Native American water rights claims and addressing endangered species issues where there is no clear responsible party. However, there is no federal interest in projects that place additional stress on over-allocated surface supplies or overtapped groundwater basins.

C. COLORADO RIVER BASIN WATER SUPPLY AND DEMAND STUDY

This analysis has revealed that the Colorado River Basin is the focus of the largest concentration of proposed pipeline projects in the West. Specifically, Appendix B summarizes five proposals for new pipelines to divert water from the Colorado River and another seven proposals to divert water



into the Basin. Many of these proposed projects are large individually. In addition, the cumulative impact of these projects could be significant.

The BOR's Colorado River Basin Water Supply and Demand Study is scheduled for completion in September of 2012. That effort is working to characterize the water management challenges facing the Basin. It is not yet clear if the Basin Study effort will continue or what other planning efforts will continue the effort begun by the Basin Study. Whatever the forum, it is important that the projects and issues identified in this report, including potential cumulative impacts, be addressed carefully.

VII. CONCLUSIONS

- Surface and groundwater sources and aquatic ecosystems in the West are under significant stress.
- Climate change is likely to reduce the available water in much of the West, and present additional challenges to maintaining healthy aquatic ecosystems.
- Rising costs and the declining availability of cost-effective “undeveloped” water has reduced the number of traditional surface storage projects in the West.
- There is a new generation of pipeline projects proposed around the West. Many of these projects rely on water sources that are far less reliable than past water projects.
- Some of these projects have the potential to increase conflict and harm other existing water users.
- By increasing reliance on unsustainable water sources, some of these projects could increase the water supply and economic vulnerability of communities in the long term.
- The analysis of proposed pipeline projects frequently overlooks key issues related to cost, reliability of water sources, energy impacts and alternatives, particularly improvements in water use efficiency.
- The federal government’s traditional role in funding water infrastructure in the West, and its emerging role in funding new pipeline projects, encourages infrastructure solutions such as pipeline projects, rather than more cost-effective solutions such as water use efficiency. There is a federal interest in resolving Native American water rights claims and addressing endangered species issues where there is no clear responsible party. However, there is no federal interest in projects that place additional stress on overallocated surface supplies or overtapped groundwater basins.
- Pipeline projects can be very energy intensive. The use of fossil fuel sources to provide this energy would further increase greenhouse gas emissions and further increase the pressure on western water resources by exacerbating climate change.
- The volatility of energy prices suggests that the ultimate volumetric cost of water from new energy-intensive pipeline projects could be highly variable.
- The use of renewable energy could reduce the carbon footprint of water conveyance projects in the West.

VIII. RECOMMENDATIONS

NRDC recommends that local, state, and federal agencies utilize the following approach in investigating and pursuing proposed pipeline projects:

- New water supply projects in the West should be designed to reduce, rather than increase, the current imbalances in water use—such as groundwater overdraft and overcommitted surface water sources.
- A beneficiary pays approach to the financing of water projects is the best way to internalize the costs of water projects and encourage efficient water use.
- Proposed pipeline projects should include an analysis of all of the following issues:
 - The reliability of proposed water sources, including existing demand, current constraints on proposed surface sources, the sustainability of proposed groundwater pumping, dry-year reliability, ecosystem health and likely changes in hydrology and demand caused by climate change.
 - Potential impacts to existing water users and communities.
 - Potential impacts of proposed new transbasin diversions on water use in the basin of origination.
 - The capital and operating cost of the proposed project, in comparison with the benefits. (This should include an analysis of the external costs of proposed projects, such as environmental impacts.)
 - The alternatives to the project, particularly urban and agricultural water use efficiency, water recycling, urban stormwater capture, and voluntary water transfers. Water managers should consider adopting a “least cost first” approach to water supply investments, similar in concept to California’s energy loading order.
 - Energy use and energy sources, including per acre-foot and total annual energy use.
 - Potential new greenhouse gas emissions.
- Energy for future pipeline projects should be provided through investments in renewable energy sources. (Such

use of renewable power, however, should not justify uneconomic and unsustainable projects.) Water agencies should also invest in renewable sources to provide the energy required for existing pipeline projects, such as California’s State Water Project.

A. LOCAL AGENCIES

As a result of constraints on the federal budget, it likely that the vast majority of the funding for most new water supply projects in the West will be borne by local agencies. Local water users, of course, have a great deal at stake if they rely on unsustainable sources. Ultimately, these communities could suffer increased water shortages and higher water rates if they pursue poorly designed projects. Local agencies also have the ability to pursue and invest in a broad range of water solutions. (As explained below, this is not true, at the moment, for federal agencies.) In addition to considering general recommendations above, local agencies should ensure that rate payers are provided with information regarding the above issues and the range of alternatives before water utilities make decisions on proposed new pipeline projects.

B. STATE AGENCIES

State agencies often play critical roles in studying financing and implementing water supply projects. Projects such as California’s State Water Project represent the most dramatic examples. However, the growing need for cooperation among Colorado River Basin states to address the current and growing imbalance between supply and demand also demonstrates the clear role for state involvement in thoughtfully addressing imbalances between supplies and demand. In addition to considering the general recommendations above, state agencies should ensure the following:

- Where proposed projects could have impacts to other water users and across state lines, state water agencies should actively investigate the issues summarized above, in collaboration with tribal governments,

environmentalists, and other stakeholders.

- All western states should undertake ambitious and comprehensive efforts to prepare for the potential impacts of climate change on water resources. These adaptation efforts should address a full range of potential impacts on aquatic ecosystems, water supply and other resources. Such adaptation planning efforts, as discussed in NRDC's report *"Ready or Not: An Evaluation of State Climate and Water Preparedness Planning,"* will allow significantly improved evaluations of proposed new conveyance projects and available alternatives.
- Scarce state water supply funding should be focused on the most affordable and reliable projects—those that increase the efficiency of water use and re-use.

C. FEDERAL AGENCIES

The federal government plays a far larger role in water policy than is often realized. The BOR and the Corps of Engineers finance and manage water storage and power on major western rivers. Federal environmental laws affect water policy, as does federal management of tribal water. But one of the most important roles in the next decades will be in helping to determine how the western United States will respond to the pressures bearing on western water resources. Simply put, the federal government can encourage local communities to manage demand and support research into new water technologies, or it can provide federal funding for water pipelines across great distances to water stressed communities. The latter approach may, in many cases, prove more costly, more environmentally damaging and less reliable in the long-term. We suggest a more clearly defined and limited federal role. In addition to considering general

recommendations above, federal agencies should ensure the following:

- Federal funds should be focused on projects where there is a strong federal nexus, such as resolving Native American water rights claims and addressing endangered species issues where there is no clear responsible party.
- Scarce federal water supply funding should also be focused on the most affordable and reliable projects—those that increase the efficiency of water use and re-use. Federal agencies should no longer fund traditional water development, particularly in regions where such additional traditional development would be unsustainable.
- Given the large number of proposed projects to divert water from the Colorado River, as well as into the Basin, the BOR's Colorado River Basin Water Supply and Demand Study and subsequent efforts should address the cumulative potential impacts of the potential projects summarized in this report.
- President Obama's Executive Order on Greenhouse Gases mandates that agencies seek means of reducing their carbon emissions. One of the stated goals of the Order is to "make reduction of greenhouse gas emissions a priority for Federal agencies." Federal agencies, particularly the Bureau of Reclamation and the Corps of Engineers, should implement this Executive Order with respect to their water responsibilities by reporting the energy use and associated greenhouse gas emissions of projects that they fund.
- The new Principles and Guidelines for Water and Land Related Resources (Principles and Guidelines) that are under development by federal agencies should address the issues discussed in this paper, to give decision-makers a more complete understanding of proposed projects. In particular, these principles should address the energy issues raised by water projects, including proposed pipeline projects.

IX. APPENDIX A

PIPELINE PROJECTS IN OPERATION

Throughout the West, there is a vast number of existing water projects that include pipelines and tunnels as significant project facilities. The following list includes 19 of the more prominent existing pipeline projects in the West. This appendix does not include many large projects that do not include significant pipelines. It also excludes many small projects. These projects were selected to include the largest pipeline projects, as well as broad geographic representation. This list provides a valuable baseline against which to compare proposed new pipeline projects.

Little Snake-Douglas Creek Project: This project has been in use by Cheyenne, Wyoming since the 1960s. Water is collected in the Little Snake River Basin, located west of the Continental Divide, transferred across the Divide through a tunnel, and stored in Hog Park Reservoir, on the eastern side of the Divide. This water is provided to the City of Cheyenne through exchanges with other water users on tributaries of the North Platte River.¹ Stage II water diversion construction began in 1982, enlarging reservoirs, laying new pipelines and increasing diversions.² Stage I and Stage II were operated together for the first time in 1992.³ The anticipated average annual water yield from Stage I and Stage II together is 21,000 af.⁴

The Colorado-Big Thompson Project: This diversion project collects Western Slope water from the headwaters of the Colorado River and diverts it to the Front Range and Plains. It was built between 1938 and 1957, and provides 213,000 af of water to 30 cities and towns. The water is used to help irrigate approximately 693,000 acres of northeastern Colorado farmland. It consists of 35 miles of tunnels, 95 miles of canals, and 700 miles of transmission lines. The project spans 150 miles east to west, and 65 miles from north to south.⁵

Additional Colorado Transbasin Diversions: Five additional diversions from the Western Slope to the Front Range collectively divert approximately another 150,000 af per year from the Colorado River Basin.⁶ These diversions include Grand River Ditch, Harold D. Roberts Tunnel, Homestake Tunnel, Moffat Water Tunnel, and Twin Lakes Tunnel.

The San Juan-Chama Project: This project moves water from the San Juan River basin to the Rio Grande basin, providing water to Albuquerque and Santa Fe, New Mexico. Overall, the San Juan-Chama project provides 86,210 af per year to water users in New Mexico, one-fourth of which is used for irrigation.⁷

The project utilizes water from the Navajo, Little Navajo, and Blanco Rivers, all upper tributaries of the San Juan River, and transports it to the Rio Grande basin. Water from the rivers is transferred via pipelines of varying lengths, the longest of which is 12.8 miles, from Heron Dam on Willow Creek. The reservoir has a capacity of 401,320 af, or more than four years of full supply of the project.⁸

Central Utah Project (CUP): The CUP was originally authorized as a BOR project in 1956. It is a complex project with several authorized units, utilizing water from the Bonneville and Green River basins. The Bonneville Unit is the largest and most complex of these units, including transbasin water diversions, 10 reservoirs, and more than 200 miles of aqueducts, tunnels, and canals. Major reservoirs include Starvation Reservoir, with a capacity of 167,000 af; Jordanelle Reservoir, with a capacity of 363,000 af; and Strawberry Reservoir, with a capacity of 1.1 maf. Strawberry Aqueduct is 37 miles long and collects water from tributaries of the Dechesne River to deliver to Strawberry Reservoir.⁹ The Jordan Aqueduct is 36 miles long and delivers approximately 70,000 af of water annually to the Salt Lake Valley from the Provo River and Jordanelle Reservoir. The CUP is working to complete a system of more than 50 miles of additional pipelines in the Utah Lake Basin.¹⁰ Collectively, the Bonneville unit's facilities are designed to provide municipal residents with a total of 107,000 af of water annually, with another 111,000 af for agricultural water users.¹¹

Central Arizona Project (CAP): The CAP was begun in 1973 and is among the largest and most expensive aqueduct systems in the United States. It includes 335 miles of aqueducts, 14 pumping stations, and 15 miles of tunnels that are designed to lift and move 1.5 maf of water annually from Lake Havasu to central and southern Arizona.^{12,13} The project

is substantially complete, but there are plans to build several distribution systems for Native American communities which could take another 10 to 20 years.¹⁴

The Colorado River Aqueduct: Completed in 1939, this 242 mile long aqueduct provides Southern California with approximately 1.2 maf of water annually from the Colorado River. It includes nine reservoirs, five pumping stations, 63 miles of canals, 92 miles of tunnels, and 84 miles of buried conduit and siphons.¹⁵

Los Angeles Aqueduct: There are two Los Angeles aqueducts. The first was completed in 1913 for less than \$23 million, and includes 223 miles of aqueduct. The second was completed in 1970. It cost nearly \$89 million and includes 137 miles of aqueduct.¹⁶ Both pipelines are gravity fed. Today, these projects provide Los Angeles with an average of 254,000 af per year, although there is significant variation in deliveries among years.¹⁷

California's State Water Project: This project includes 34 storage facilities and more than 700 miles of pipelines and canals.¹⁸ In addition to providing water for agriculture in the Central Valley through the California Aqueduct, the project includes a series of pipelines, canals, and tunnels serving urban areas. The project includes the South Bay Aqueduct, which is composed of a series of pipelines that reach from the Sacramento-San Joaquin Delta to Alameda and Santa Clara Counties in the southern part of the San Francisco Bay Area.¹⁹ The North Bay Aqueduct carries water to cities on the northern edge of the San Francisco Bay Area.²⁰ The Coastal Branch reaches to California's Central Coast, near the City of Santa Barbara.²¹ Finally, the project includes the west and east Branches, which pump water 2,000 feet up and over the Techachapi Mountains to Southern California. On average, the SWP delivers 2.4 maf of water.²²

The Central Valley Project (CVP): The BOR's CVP consists of 20 dams and reservoirs, 11 power plants, and 500 miles of major canals, as well as conduits, tunnels, and related facilities.²³ The vast majority of this water is consumed by agriculture in the Central Valley, however, the San Felipe Division carries water through a 48 mile pipeline to agricultural water users in the Central Coast area and to urban water users in Santa Clara County.²⁴ Between 2005 and 2010, the CVP delivered an average of 5.3 maf per year.²⁵

The Hetch Hetchy Aqueduct: San Francisco's 160-mile long aqueduct diverts water from Hetch Hetchy Reservoir in Yosemite National Park and delivers about 165,000 af of Sierra Nevada water per year to San Francisco, as well as parts of San Mateo, Santa Clara, and Alameda counties. Annually, the system generates more than 2 billion kwh of hydropower. The aqueduct is dependent entirely on gravity to convey water. It was built in the 1920s and 1930s.²⁶

The Mokelumne Aqueduct: The 91 mile long Mokelumne Aqueduct supplies water to the East Bay communities in California, including Oakland, Berkeley, Richmond, and parts of Alameda and Contra Costa County. Initial construction began in the 1920s and additional aqueducts and pipelines were built as recently as the 1960s.²⁷ Pardee Reservoir holds 210,000 af of water, which is used to regulate supply in winter and spring. The district has rights of up to 364,000 af of water on the Mokelumne River.²⁸

Portland Water Bureau: Three pipelines take water approximately 26 miles from two reservoirs in the Bull Run watershed to provide domestic supplies for Portland, Oregon.²⁹ The project diverts approximately 132,000 af annually.³⁰

Cedar River: The City of Seattle receives some of its water supply from two 28-mile long pipelines from the Cedar River watershed, diverting approximately 92 million gallons per day, or 103,500 af annually, to serve Seattle and surrounding communities.³¹ The city also receives water from the Tolt River watershed.

Mni Wiconi Rural Water System: Providing water for Native American communities in South Dakota, this project has been in development for more than 20 years; construction is scheduled to be completed in 2013 at a cost of more than \$400 million. The water system will provide communities with Missouri River water to replace contaminated groundwater. Through a network of 4,400 miles of pipelines, the project will serve more than 51,000 people in 10 counties.³² When completed, the system will provide between 8,591 and 12,474 af annually.³³ The federal government is financing the construction costs—some \$350 million—to provide water to the three reservations served. Local ratepayers are required to pay back a low-interest state loan and cover ongoing maintenance and operations costs.³⁴

X. APPENDIX B

PROJECTS “IN THE PIPELINE”

As described in Chapter 2, there is a growing list of proposed water pipeline projects throughout the western United States. The projects summarized in this appendix do not represent a comprehensive list. They are also at various stages of completion, ranging from the early conceptual stage of planning to ongoing construction. The following projects present a cross-section of pipeline projects currently under consideration in the West.

COLORADO RIVER BASIN PROJECTS

Five new water conveyance projects have been proposed in the Colorado River Basin. Together, these projects would increase diversions from an already-overtapped Colorado River Basin by more than 690,000 af per year—more than double Nevada’s 300,000 af allocation.

Flaming Gorge Pipeline: A pipeline from Flaming Gorge reservoir has been proposed for several years, also dubbed the Colorado-Wyoming Cooperative Supply Project and the “Million Pipeline,” after project supporter and entrepreneur Alex Million. The project will likely mirror a prior proposal for a 500-mile long pipeline to move approximately 250,000 af of water annually from the Green River above Flaming Gorge to the Front Range. The project has been proposed by two entities—Aaron Million and the Colorado-Wyoming Coalition, a group of cities and utilities (primarily in Colorado). In addition, the State of Colorado has sponsored a task force to investigate the potential benefits and drawbacks of the project.¹ In February 2012, the Federal Energy Regulatory Commission (FERC) dismissed the application for this project as premature.² On May 17 2012, FERC denied a request to reconsider the project.³

Lake Powell Pipeline Project: This project would provide 100,000 af annually of Colorado River water to communities in Utah. It would include 120 miles of 66-inch diameter pipeline from the Lake Powell Glen Canyon dam site in Arizona to Sand Hollow Reservoir near St. George, Utah, and potentially an additional 38 miles of 30-inch diameter pipeline from Sand Hollow to Cedar City.⁴ The most current cost estimate is almost \$1.1 billion as of June 2008.⁵ In March

of 2012, the Utah Legislature rejected a proposal to dedicate Utah sales tax revenues to the project.⁶ The EIS for the project is scheduled to begin in mid-2012.⁷

Yampa River Pumpback: This proposed project, which was the subject of a feasibility study by the Northern Colorado Water Conservancy District, would consist of a new 500,000 af reservoir and 250 miles of tunnels and pipelines through the Continental Divide to carry up to 300,000 af of water to the Front Range.⁸ The project could cost close to \$4 billion. It stalled in 2008, after the completion of an initial study.

Navajo-Gallup Project: Congress authorized this project to provide water to the Navajo Nation and nearby communities. The proposed project will provide water for approximately 250,000 people by the year 2040. It will take water via diversions from the San Juan River in northern New Mexico and divert it to the eastern section of the Navajo Nation, the southwestern part of the Jicarilla Apache Nation, and the City of Gallup. The proposed project would provide these locations with a total of 35,893 af of Colorado River Basin water annually.⁹

The preferred alternative for the Navajo-Gallup Project, known as the San Juan River Public Service Company of New Mexico alternative, includes 260 miles of pipeline, 24 pumping plants, and two water treatment plants. Based on a 2007 estimate, the cost of the project is \$864 million, a considerable increase from the 2005 estimate of \$716 million.¹⁰ In 2009, Congress authorized construction of the project, in part to resolve Indian water rights issues.

The EIS was issued March 2007.¹¹ The EIS did not include an analysis of the cost of a water conservation-based alternative.¹² The BOR has considered the use of renewable energy in this project, but it would be more expensive than the hydropower that is available to the project.

Narrows Project: This project would divert water from the Price River (a tributary of the Green River in the Colorado River Basin) to Sanpete County, Utah. It was first investigated by the Bureau of Reclamation in the 1930s.¹³ The proposal would represent a transbasin diversion from the Colorado River Basin to the Great Basin and would involve three tunnels, totaling 16.8 miles, as well as a new Narrows Dam and 17,000 af reservoir.¹⁴ The project would divert a

maximum of 5,400 af per year and an average of 5,136 af. Of that average amount, 855 af would be for municipal and industrial uses, and 4,281 af for irrigation.¹⁵ Construction costs for the project would total \$40.3 million dollars, with a proposed federal loan providing a portion of this cost. The document does not include a discussion of annual operating costs.¹⁶ A draft EIS for the project was issued in March of 2010.

OTHER WESTERN PROJECTS

Although the Colorado River Basin has the most proposed pipeline projects, there are additional projects located in basins across the rest of the West:

Northern Integrated Supply Project: This project, proposed by the Northern Colorado Water Conservancy District, would provide up to 40,000 af of water from the Cache la Poudre River. The project would include a new 170,000 af Glade Reservoir and a system of pipelines ranging from 36 to 62 miles long to serve 15 water providers.¹⁷ The project would cost approximately \$490 million.¹⁸ A draft EIS was issued in April of 2008 and a supplemental document is currently in preparation.¹⁹

Mississippi River/Ogallala Aquifer: Pat Mulroy, general manager of the Southern Nevada Water Authority, recently reintroduced the decades-old idea of capturing floodwater from the Mississippi River and diverting it to the Ogallala Aquifer beneath the Central Plains in order to replenish it. The Ogallala Aquifer, which covers some 174,000 square miles and includes portions of eight states, is suffering from high levels of groundwater overdraft. This project could dwarf both the Hoover and Glen Canyon Dams in terms of cost. This proposal would employ a complex series of multi-state water transfers, designed to reduce the transbasin use of Colorado River water on the Front Range, freeing up water for other communities in the Colorado River Basin, including Las Vegas. Mulroy has said that, “We can’t conserve our way out of a massive Colorado River drought” and believes that pipeline projects such as this are necessary to prevent water shortages. Years of study and multi-state negotiations would be needed if this project were to be undertaken. A project of this size and complexity faces an uncertain future.²⁰

Southern Delivery System: Designed to serve Colorado Springs and surrounding communities, the Southern Delivery System in Colorado will use a 62 mile pipeline to transport 52,900 af per year from the Arkansas River. Construction began in 2010, and the system is slated to begin delivering water in 2016.²¹

Ute Lake Project: In 2008, the Ute Water Commission granted approval for a facility to take Canadian River water from Ute Lake for use in eight eastern New Mexico communities. The project is now estimated to cost approximately \$500 million.²² A draft environmental assessment concluded that there is no significant environmental impact to the project, despite the energy required to pump and deliver water. The project is designed to include 87.5 miles of transmission pipelines

ranging from 30 to 54 inches and 94.8 miles of lateral pipelines, from 4 to 36 inches.²³ The project is designed to deliver 16,450 af of water per year.²⁴ Proponents intend for the federal government to pay most of the costs of the project. Although the project has been authorized, very little federal funding has been appropriated. Construction has begun in an effort to secure the federal funding. In this analysis, the average elevation gain from the Ute Lake Reservoir to the seven participating community members of the Eastern New Mexico Regional Water System project was estimated to be approximately 535 feet. In May of 2012, local citizens concerned about impacts on lake levels and the local economy filed two requests in state court for injunctions to block construction of the project.²⁵

Uvalde to San Antonio Pipeline: Private investors have proposed a pipeline that would transport water from the Edwards Aquifer in Uvalde County Texas to San Antonio. The pipeline would be 67 to 75 miles long and would transport up to 40,000 af of water per year. The project is estimated to cost about a quarter of a billion dollars and the financing would be raised privately. There currently is a ban on pipelines to transport Edwards Aquifer water from Uvalde County to another county, but investors are trying to persuade state lawmakers to make an exception for this project.²⁶

Santa Fe-Pecos Pipeline: Another proposed pipeline would provide water to homes and businesses in Santa Fe and other communities in the Rio Grande Basin from Fort Sumner, near the Pecos River. This project, which was proposed by a private developer, would include 150 miles of pipeline. Five farmers in the Fort Sumner area have agreed to transfer rights to 6,600 af of Pecos River water to Santa Fe. Opposition to the project includes local, state, and area water agencies.²⁷

Eastern Nevada to Las Vegas Pipeline: Nevada received a 300,000 af entitlement from the Colorado River when it was allocated among seven western states. Rapid growth has led Las Vegas to seek new sources of water. The Southern Nevada Water Authority (SNWA) is pursuing plans for an almost 300-mile long pipeline project to pump water from groundwater basins in eastern and central Nevada (and from groundwater resources shared with Utah) per year. The project would cost \$3.5 billion to build.²⁸ However, a 2011 report that the SNWA described as a “worst case” analysis concluded that the project could cost as much as \$7.3 billion to build.²⁹ The Nevada Supreme Court held up the project in early 2010 when it found violations of the rights of people who had opposed the water rights for the proposed project. (In 1989, SNWA’s predecessor filed applications for these water rights.) The Nevada Supreme Court ruled in 2010 that the State Engineer must re-notice SNWA’s remaining water rights for public comment.³⁰ In March of 2012, the State Engineer granted SNWA permission to divert 84,000 af per year from four rural valleys in Eastern Nevada, less than the 126,000 af that SNWA had originally sought.³¹ The DEIS for the project includes projections of long-term drawdown of groundwater levels.³²

Cadiz Valley Project: Cadiz, a publicly-traded firm, is seeking to develop a project that would pump groundwater from a closed Mojave Desert basin in Southern California through a 43-mile pipeline to the Colorado River Aqueduct. The project would deliver up to 50,000 af per year to participating water districts, which, according to Cadiz, include the Santa Margarita Water District, Three Valleys Municipal Water District, Suburban Water Systems, Golden State Water Company, and Jurupa Community Services.³³ The project, which could also include a second phase with a storage component, is a revised version of a project that was rejected by the Metropolitan Water District of Southern California in 2002.³⁴ A retired United States Geological Services hydrogeologist has concluded that annual groundwater recharge is only approximately 5,000 af per year.³⁵

The Peripheral Canal/Tunnel: The Bay-Delta Conservation Plan (BDCP) is preparing a Habitat Conservation Plan for California's Bay-Delta estuary. BDCP is a state-federal partnership, financed by water users. Under state law, the BDCP plan must advance the dual goals of restoring ecosystem health and increasing water supply reliability for the Central Valley farms and Southern California and Bay Area cities that depend on deliveries from the Delta. It must also advance a state policy of reducing reliance on Delta water supplies. BDCP is studying a possible new Delta conveyance facility to carry water from the Sacramento River in the North Delta to the State Water Project and Federal Central Valley Project pumps in the South Delta. (In 1982, California voters defeated a previous proposal to construct a Peripheral Canal in the Delta.) Stakeholders have offered different, and sometimes conflicting, reasons to construct a new Delta facility, including reducing the risk to water supplies from sea level rise, earthquakes and potential Delta levee failures, increasing water exports, and helping to restore the Bay-Delta estuary and its fisheries. Many alternative Delta conveyance approaches have been proposed, including strengthening existing levees and building a pipeline, aqueduct or tunnel with capacities ranging from 3,000 to 15,000 cfs.

At the moment, the BDCP is focused primarily on a 15,000 cfs, 37-mile long facility that would consist of twin tunnels under the Delta, each 33 feet in diameter.³⁶ The amount of water that such a facility would produce is uncertain. Water users who rely on Delta exports are seeking a significant increase in Delta pumping up to 5.9 million af—a 1.2 maf increase, on average—compared with currently authorized pumping levels.³⁷ However, the State Water Resources Control Board has determined that restoring the Bay-Delta ecosystem would require a significant reduction in total water diversions in comparison with current levels.³⁸ To date, the BDCP has been unwilling to investigate water use efficiency, water recycling, and other water strategies in its development of alternatives. The capital cost of the construction of a tunnel could be \$12 billion or more. Total annual costs of the BDCP, including capital cost for a new facility, operations, maintenance, habitat restoration, and financing could reach \$948 million for 50 years.³⁹

Weber Siphon: Currently under construction by the BOR, the Weber Siphon is a \$48 million project that would more than double the capacity of this portion of the Columbia Basin Project, adding 1,950 cfs to create a total conveyance capacity of 3,650 cfs where the project crosses Interstate 90.⁴⁰ This short project is designed to deliver 30,000 af of water to 10,000 acres of agricultural land in the Odessa Subregion in Washington State.⁴¹ The project was funded by the American Recovery and Reinvestment Act.

Lewis and Clark Regional Water System: When completed, the system will provide drinking water through 337 miles of pipeline to over 300,000 people in South Dakota, Iowa, and Minnesota.⁴² Construction is scheduled to be complete in 2019, although progress has been slowed by the recent ban on congressional earmarks.⁴³ The federal government is providing 80 percent of the funding for the \$430 million dollar project.⁴⁴ The project relies on water from wells that tap into an aquifer adjacent to the Missouri River near Vermillion, South Dakota. Lewis & Clark's member systems will use this new source of water to either replace or supplement existing sources of supply. The proposed maximum for the completed system is 45 million gallons per day.⁴⁵ The project's 2002 Final Engineering Report projected the system's demands to average 22.1 million gallons per day by 2030 (approximately 24,770 af per year).⁴⁶

COLORADO RIVER BASIN STUDY PROPOSALS

As referenced in Chapter 2 of this paper, the following projects were included in the BOR's Colorado Basin Study as stakeholder submissions. These supply augmentation proposals include significant new pipeline conveyance facilities. Additional information about the submissions can be found on the bureau's website.⁴⁷

These projects are summarized below, but were not included in figure 2 or table B in the body of the report.

Snake River Import: This proposal involves diverting water from the Snake River and delivering it to the Green River Basin. Project submitters approximated that this could provide 33,000 afy of water using existing storage, or 155,000 afy if new storage were constructed. This project would require 26 miles of pipe and 6 miles of tunnel. The project's cost is estimated at \$250 million, with \$13 million per year of operations and maintenance (O&M) costs. The water is estimated to use 15.7 kWh per 1,000 gallons. This would represent an energy footprint of more than 5 MWh per af—greater than the energy required to desalinate seawater.

Missouri River Import: This conceptual proposal advocates that Missouri River and Mississippi River water be diverted to the Colorado River, and that Nevada and Arizona subsidize desalination plants along the California coast in exchange for an equivalent share of Colorado River water currently held by California.

Bear River to Ham's Fork Creek Import: This option involves diverting water from the Bear River, and diverting and pumping it to the Green River Basin. The proposal estimates that the project could provide 50,000 afy of water, that it would require 11.5 miles of pipeline, and that it would cost \$314 million to build.

Clark's Fork to Green River Import: This import would divert water from Clark's Fork of the Yellowstone River in Wyoming and deliver it to the Green River Basin. The project submission estimates that this project would provide 75,000 afy. Pipeline and tunnel length estimates range from 140 to 225 miles. Energy requirement estimates range from 83,000 hp to 90,000 hp.

Columbia River via a Submarine Pipeline: This proposal is for an under-sea pipeline from the mouth of the Columbia River to Castaic Lake for MWD usage and to the All-American Canal to offset diversions from the Colorado River. The proposal suggests studying diversions of 1,000,000 afy.

Missouri River Reuse Project: This proposal is to divert up to 600,000 afy of water from the Missouri River for reuse within the Missouri River Basin of Kansas and Colorado. The

water would be used to fill surface reservoirs and recharge depleted aquifers. Conveyance of the water across Kansas and eastern Colorado would be through single or parallel large-diameter pipelines.

Mississippi River to Colorado Front Range Pipeline:

This proposal would deliver 675,000 afy of water from the Mississippi River near Memphis to the Colorado Front Range using the largest pipeline available—one 144" pipe. The alignment option would require 660 miles of pipe and 150 miles of canal, as well as pumping stations capable of lifting the water from 200 feet above sea level to elevations between 4,000 and 5,800 feet above sea level. The total cost of the project is estimated at \$15.8 billion with annual O&M costs at \$541 million per year. Energy usage would be between 850 and 1,000 megawatts of generation. Mississippi River water could be "moved" into the Colorado River Basin through a series of exchanges with existing water users east of the Rockies, freeing up Colorado River water that is currently diverted to the Front Range.

Endnotes

CHAPTER I

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- 2 U.S. Bureau of Reclamation, "Bureau of Reclamation – Dams," Retrieved from <http://www.usbr.gov/projects/dams.jsp>, Published January 24, 2008.
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CHAPTER II

- 1 As reflected here, these existing projects represent a cross-section of significant water projects in the West that include pipelines as important project facilities. Included here are the largest of these pipeline projects, as well as additional projects, in order to include greater geographic coverage. There are many additional smaller projects, and others that rely on open canals rather than pipelines. There are scores of surface storage projects across the West that do not include long-distance water conveyance facilities. The sample of existing pipeline projects presented here provides a baseline of historical water development against which to evaluate proposed future projects.
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- 3 The proposed projects presented here exclude a wide range of water development proposals that do not include significant new pipeline conveyance facilities. Clearly, the list presented in this paper is clearly not a comprehensive list of the transbasin conveyance projects under consideration by stakeholders in the West.

CHAPTER III

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- 2 U.S. Bureau of Reclamation. *Windy Gap Firm Project Draft Environmental Impact Statement, Executive Summary*. DES 08-30. Page ES-2. August 2008; Mofatt Collection System Project Update. Denver Water. Published July 18, 2011. Retrieved from <http://www.water.denver.co.gov/SupplyPlanning/WaterSupplyProjects/Moffatt/Update/> Accessed March 21, 2012. <http://www.northernwater.org/docs/WindyGapFirming/WgfpDeisExecSum.pdf>.*
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CHAPTER X, APPENDIX B

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From: Jason Peltier

Sent: Monday, July 30, 2012 9:06 AM

To: Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLOYD Fryer; Martin McIntyre; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheehan,Rebecca D; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: Mark select

From Bill Kier to Trinity server:

'Takes me back..

It's been nearly 20 years, but the late Nat Bingham and I spent nearly a year – fruitlessly - trying to promote mark-selective salmon fishing for CA by seeking a federal appropriations earmark to provide CA Fish & Game with funds for undertaking universal marking of hatchery salmon

We successfully approached then-North Coast Congressman Dan Hamburg and had the earmark in gear before meeting with the DFG opposition at the old NMFS Tiburon Lab.

The DFGers brought in Pacific States Marine Fisheries Commission personnel to beef up their opposition, which, in memory serves, turned on two main concerns : 1- that hooking mortality, particularly for coho, was unacceptably high; and 2- that there were too many management programs that relied on longtime series of fractional marking data to simply chuck it all for a new mark-selective fishing regime

As these things go, critical junctures in the federal appropriation process were missed, Nat and I had trouble figuring out what was going on with the Hamburgers, and, when we did, we found they had quietly shelved our initiative because of the DFG opposition.

Such is the stuff conservation leadership is too often made of

To be fair, not all the opposition came from the fish bureaucrats. Earl Carpenter of Bodega Bay was still regarded as 'the Captain' of CA's commercial salmon fishing fleet and he growled 'you're going to be sorry as hell if you succeed – you're going to find there's a hell of a lot more naturals out there than you think. 'Would that it were so!

In those days Jim Martin (cc-ed here), then ODF&W's fisheries chief was pushing hard – and successfully - for what is now the NW's universal hatchery marking/mark-selective salmon fishing regime

Fishing with Jim on the Willamette last year for spring salmon (the mainstem Columbia was closed) I tied into a beauty which took me several minutes to crank up close enough to the boat to see the ad fin. It was an absolutely huge, gorgeous fish and my heart filled, frankly, for the opportunity to turn it loose, hopefully to produce more lunkers like him/her

I'm still wrapped around one of the assignments that the visionary Nat Bingham – who's been gone 14 years now – gave me, and that's boosting, however I can, genetic stock identification (see, e.g.,

<http://www.pacificfishtrax.org/media/2paggers/Genetics%20CROOS%20Summary%20Jan10.pdf>

Hopefully, between the two technologies – mark-selective fishing and GSI – we can pass salmon on to the next seven generations

Bill Kier

Kier Associates, Fisheries and Watershed Professionals
P.O. Box 915
Blue, 5525
(707)
Mobil

From: env-trinity-bounces@velocipede.dcn.davis.ca.us [<mailto:env-trinity-bounces@velocipede.dcn.davis.ca.us>] **On**
Behalf Of Tom Stokely
Sent: Friday, July 27, 2012 8:22 PM
To: env-trinity@velocipede.dcn.davis.ca.us
Subject: [env-trinity] Fwd: CBB: Study Analyzes Benefits Of 'Mark-Selective' Fishing For Wild Salmon Populations

From: "Sari Sommarstrom" <sari@sisqtel.net>
Date: July 27, 2012 6:16:01 PM PDT
To: "Trinity River e-news" <env-trinity@velocipede.dcn.davis.ca.us>
Cc: "Tom Stokely" <tstokely@att.net>
Subject: **CBB: Study Analyzes Benefits Of 'Mark-Selective' Fishing For Wild Salmon Populations**

THE COLUMBIA BASIN BULLETIN:
Weekly Fish and Wildlife News
www.cbbulletin.com
July 27, 2012
Issue No. 630

Study Analyzes Benefits Of 'Mark-Selective' Fishing For Wild Salmon Populations

A fish marking practice commonly used in Washington and Oregon could significantly increase wild salmon populations in California, while allowing continued harvest of abundant hatchery populations, according to a recent study published in Marine and Coastal Fisheries.

The article, first published June 18, is authored by Brian J. Pyper of Cramer Fish Sciences and Fish Metrics, Steven P. Cramer of Cramer Fish Sciences and Randolph P. Ericksen of Cramer Fish Sciences and the Wild Salmon Center.

California wild chinook salmon populations, including several populations that are protected under the Endangered Species Act, have declined over the past decades. This has led to increased management restrictions on commercial and recreational fisheries, as well as increased reliance on hatchery-raised fish to support those fisheries.

In Oregon and Washington, nearly all hatchery salmon produced for harvest receive a visible mark, while wild salmon remain unmarked and are therefore easily identified in ocean and river fisheries. When adult salmon are caught, marked hatchery salmon are kept, while unmarked wild salmon in most cases must be released back to the ocean or river.

This practice of "mark-selective fishing" has enabled many salmon fisheries in Oregon and Washington to continue despite serious concerns for the abundance of wild salmon, according to the recently published study. As an example naturally produced fish from a total of 13 salmon and steelhead stocks originating in the Columbia River basin are protected from non-tribal harvest.

Although California has not adopted this practice, the new study suggests that mark-selective fishing could result in substantial increases in wild salmon populations while maintaining important harvest opportunities, the research paper says.

"A harvest strategy that targets hatchery salmon over wild salmon makes sense when hatchery salmon are plentiful but are mixed with depleted wild populations" said Steve Cramer, founding scientist of the consulting firm Cramer Fish Sciences, and co-author of the publication. "If wild salmon populations in California continue to struggle and we do not find a solution that enables targeted capture of hatchery fish while allowing wild fish to escape, then it is likely that salmon fishing in California will be increasingly constrained to low levels."

The study used data on the actual abundance and harvest of chinook salmon in northern California's Central Valley and the ocean off California over two decades (1988-2007) to examine how mark-selective fishing regulations would have affected harvest and spawner abundance.

The study showed that selective fishing could have, if applied to past fishing seasons, doubled the number of wild salmon in California rivers. At the same time, it would have allowed substantial harvests of hatchery fish, depending on the proportion of salmon that were of hatchery origin.

The key results of the study applied to recent years (2001-2007) in which ocean fisheries were constrained to protect weak wild populations.

"We examined a range of plausible scenarios of fishing effort and hatchery salmon abundance," Cramer explained. "When 60 percent or more of the salmon are from hatcheries, the mark-selective scenarios generally allowed for higher total harvests of salmon and modest increases in wild populations compared to the traditional regulations that were in place to constrain harvest and protect wild fish."

The study cited other research that estimated hatchery fish have composed as high as 90 percent of chinook off California in recent years.

About 35 million juvenile chinook are released each year from Central Valley hatcheries, but most of these fish are unmarked.

"The high cost of marking all hatchery fish, and the challenge of working out new methods to estimate catch-and-release mortality of wild salmon has hindered fisheries agencies in California from implementing mark-selective fisheries," Cramer said. "Despite these challenges, the results of our study suggest that serious consideration and evaluation of mark-selective fisheries for California salmon are warranted."

The full study, "Implications of Mark-Selective Fishing for Ocean Harvests and Escapements of Sacramento River Fall Chinook Salmon Populations," can be found here: <http://www.tandfonline.com/doi/pdf/10.1080/19425120.2012.679575>

From: Jason Peltier

Sent: Friday, August 3, 2012 7:37 AM

To: 'Karen Clark'; 'Alison MacLeod'; 'Carmela McHenry'; 'Carolyn Jensen'; 'Catherine Karen'; 'David Bernhardt'; 'Doug Subers'; 'Ed Manning'; 'Gayle Holman'; 'Joe Findaro'; 'Mike Burns'; 'Susan Ramos'; 'Tony Coelho'; T Birmingham

Subject: PBS link

http://www.pbs.org/newshour/bb/science/july-dec12/waterwar_08-02.html

From: Jason Peltier

Sent: Friday, August 3, 2012 7:43 AM

To: Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; Martin McIntyre; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheehan,Rebecca D; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: this is crap

http://www.pbs.org/newshour/bb/science/july-dec12/waterwar_08-02.html

From: Jason Peltier

Sent: Wednesday, August 29, 2012 8:59 AM

To: Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; Martin McIntyre; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheehan,Rebecca D; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: FW: Outlandish

From: Mike Henry [mailto:mhenry@farmwater.org]

Sent: Wednesday, August 29, 2012 8:52 AM

To: Jason Peltier

Subject: Outlandish

Jason...several of those “draining the river” type comments in this post:

Peripheral Canal: Get It Right or Don't Do It

Author: Victor Gonella

September, 2012 Issue

North Bay biz

On June 22, 12 U.S. Congress members, all from Northern California, sent a letter to Interior Secretary Ken Salazar and acting Commerce Secretary Rebecca Blank. They asked the secretaries to withhold their support for Governor Jerry Brown's plan to build a peripheral canal that could destroy much of the Sacramento Bay Delta and the commercially valuable salmon runs that transit the delta annually. The signing members include those representing salmon fishermen in Bodega Bay, San Francisco, Sausalito, Half Moon Bay and other Bay Area ports.

The peripheral canal's primary purpose is to interrupt the natural flow of the Sacramento River, reroute it around the environmentally sensitive delta, and deliver it to federal and state pumps that move water south to corporate agricultural operations on the western side of California's San Joaquin Valley and to Southern California cities.

The state is proposing to build the canal project without first doing basic calculations to determine how much water it needs to leave in the river and delta to keep salmon, other wildlife and the delta alive. Without this calculation, it's not clear how much water might be safely available for diversion and export. And without that information, the state can't right-size the canal.

Currently, the state is supporting a canal big enough to drain the entire Sacramento River at most times of year. This mega-canal was dreamed up by the water users at the receiving end of the pipe, waiting to turn water into hard cash. At this size, the canal is a nonstarter for those whose jobs are tied to healthy salmon runs. Salmon industry workers (think commercial fishermen, boat dealerships, seafood processors, chefs, restaurants, tackle shops, marinas and the like), delta farmers and others know an oversized canal will not only kill salmon but will also leave little more than a stagnant sewer in the delta for local farmers to draw from.

The 12 opposing members of Congress say the plan to build the peripheral canal “raises far more questions than it answers and appears to turn the maxim of ‘policy before plumbing’ on its head.”

Huge water diversions in the Sacramento/Bay Delta between 2000 and 2006 were finally stemmed by court order, but only

after causing salmon runs to collapse, leading to the first-ever California ocean salmon fishing closures in 2008 and 2009. Those closures brought the \$1.4 billion salmon industry to its knees. Recent federal water diversion restrictions are a first step toward a fully restored salmon fishery, which could eventually yield more than \$5 billion in annual economic activity, according to a review of state and federal data by the Southwick Economics firm.

The National Academy of Sciences has looked at the peripheral canal proposal and issued a scathing review, saying that, so far, the scientific analysis is wholly inadequate. Officials with the National Marine Fisheries Service, U.S. Fish and Wildlife Service and California Department of Fish and Game have all issued red-flag warnings about the biological damage the current project threatens. The Golden Gate Salmon Association supports these findings. Among other things, current plans largely ignore legal requirements to accommodate federally protected species in the delta. Forging ahead on an ill-conceived canal provides a fat target for lawsuits.

Then there's the issue of who's going to get stuck with the multibillion dollar bill. A recent analysis by the University of Pacific's Eberhardt School of Business, Business Forecasting Center says the costs would outweigh benefits by 2.5 times if you consider costs the public will bear. The benefits will accrue mostly to a small group of agricultural operators who will receive publicly subsidized water. The rest of us will pay—one way or another. So far, the state has refused to do a statewide cost benefit analysis for this massive public works project.

More worrisome to average Southern Californians, canal planning documents suggest that western San Joaquin Valley agriculture operations, which are expected to reap 75 percent of the benefits, could pay for only 25 percent of the costs. Might the other 75 percent of the costs be shifted to urban water users in Southern California? Or will it be shared by public users across the state?

Canal proponents currently call for more water in the critical months of August and September, exactly when adult salmon migrate in from the sea to spawn in the Sacramento River. Salmon need cold water to successfully spawn, something canal planners have apparently overlooked. These same planners say they aren't responsible for the upstream carnage their project might create. If that's true, then who is?

What's more, scientists routinely predict that climate disruption will impact California—its coastline, sea level, weather patterns, precipitation rates and a growing list of other conditions. The currently proposed plan indicates climate assumptions will be “forthcoming.”

The 12 members of the California Congressional Delegation who signed the petition requested that Governor Brown not proceed with the canal until his administration answers basic questions. Full disclosure should be provided to all Californians and every taxpayer and Southern California ratepayer. Absent a responsible policy firmly in place, this proposal looms as a giant recipe for disaster, not one for reliable, ecologically appropriate water service.

Victor Gonella is president of the Golden Gate Salmon Association <<http://goldengatesalmonassociation.com>> . Contact him at (707) 765-3073 or victor@ggsa.com.

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From: Jason Peltier

Sent: Wednesday, August 29, 2012 8:59 AM

To: Allison Dvorak Febbo; Ara Azhderian; B Walthall; BJ Miller; Brenda Burman; Byron Buck; Carolyn Jensen; Chris Beale; Clare Foley; Cliff Schulz; Curtis Creel; D Nelson; Dan Keppen; David Bernhardt; Ed Manning; frances.mizuno@sldmwa.org; Gayle Holman; Greg Zlotnick; Jason Peltier; Joe Findaro; Jon Rubin; Kear,Adam C; Laura King Moon; Laura Simonek; LLoyd Fryer; Martin McIntyre; Mike Henry; Mike Wade; Neudeck,Randall D; Philp,Thomas S; Rodriguez, Larry; Roger Patterson; Rose Schlueter; Sheehan,Rebecca D; Sheila Greene; Steve Arakawa; Sue Ramos; Terry Erlewine; Tom Boardman; Tom Glover; Tom Mongan; 'Valerie Connor'

Subject: FW: Outlandish

From: Mike Henry [mailto:mhenry@farmwater.org]

Sent: Wednesday, August 29, 2012 8:52 AM

To: Jason Peltier

Subject: Outlandish

Jason...several of those "draining the river" type comments in this post:

Peripheral Canal: Get It Right or Don't Do It

Author: Victor Gonella

September, 2012 Issue

North Bay biz

On June 22, 12 U.S. Congress members, all from Northern California, sent a letter to Interior Secretary Ken Salazar and acting Commerce Secretary Rebecca Blank. They asked the secretaries to withhold their support for Governor Jerry Brown's plan to build a peripheral canal that could destroy much of the Sacramento Bay Delta and the commercially valuable salmon runs that transit the delta annually. The signing members include those representing salmon fishermen in Bodega Bay, San Francisco, Sausalito, Half Moon Bay and other Bay Area ports.

The peripheral canal's primary purpose is to interrupt the natural flow of the Sacramento River, reroute it around the environmentally sensitive delta, and deliver it to federal and state pumps that move water south to corporate agricultural operations on the western side of California's San Joaquin Valley and to Southern California cities.

The state is proposing to build the canal project without first doing basic calculations to determine how much water it needs to leave in the river and delta to keep salmon, other wildlife and the delta alive. Without this calculation, it's not clear how much water might be safely available for diversion and export. And without that information, the state can't right-size the canal.

Currently, the state is supporting a canal big enough to drain the entire Sacramento River at most times of year. This mega-canal was dreamed up by the water users at the receiving end of the pipe, waiting to turn water into hard cash. At this size, the canal is a nonstarter for those whose jobs are tied to healthy salmon runs. Salmon industry workers (think commercial fishermen, boat dealerships, seafood processors, chefs, restaurants, tackle shops, marinas and the like), delta farmers and others know an oversized canal will not only kill salmon but will also leave little more than a stagnant sewer in the delta for local farmers to draw from.

The 12 opposing members of Congress say the plan to build the peripheral canal "raises far more questions than it answers and appears to turn the maxim of 'policy before plumbing' on its head."

Huge water diversions in the Sacramento/Bay Delta between 2000 and 2006 were finally stemmed by court order, but only

after causing salmon runs to collapse, leading to the first-ever California ocean salmon fishing closures in 2008 and 2009. Those closures brought the \$1.4 billion salmon industry to its knees. Recent federal water diversion restrictions are a first step toward a fully restored salmon fishery, which could eventually yield more than \$5 billion in annual economic activity, according to a review of state and federal data by the Southwick Economics firm.

The National Academy of Sciences has looked at the peripheral canal proposal and issued a scathing review, saying that, so far, the scientific analysis is wholly inadequate. Officials with the National Marine Fisheries Service, U.S. Fish and Wildlife Service and California Department of Fish and Game have all issued red-flag warnings about the biological damage the current project threatens. The Golden Gate Salmon Association supports these findings. Among other things, current plans largely ignore legal requirements to accommodate federally protected species in the delta. Forging ahead on an ill-conceived canal provides a fat target for lawsuits.

Then there's the issue of who's going to get stuck with the multibillion dollar bill. A recent analysis by the University of Pacific's Eberhardt School of Business, Business Forecasting Center says the costs would outweigh benefits by 2.5 times if you consider costs the public will bear. The benefits will accrue mostly to a small group of agricultural operators who will receive publicly subsidized water. The rest of us will pay—one way or another. So far, the state has refused to do a statewide cost benefit analysis for this massive public works project.

More worrisome to average Southern Californians, canal planning documents suggest that western San Joaquin Valley agriculture operations, which are expected to reap 75 percent of the benefits, could pay for only 25 percent of the costs. Might the other 75 percent of the costs be shifted to urban water users in Southern California? Or will it be shared by public users across the state?

Canal proponents currently call for more water in the critical months of August and September, exactly when adult salmon migrate in from the sea to spawn in the Sacramento River. Salmon need cold water to successfully spawn, something canal planners have apparently overlooked. These same planners say they aren't responsible for the upstream carnage their project might create. If that's true, then who is?

What's more, scientists routinely predict that climate disruption will impact California—its coastline, sea level, weather patterns, precipitation rates and a growing list of other conditions. The currently proposed plan indicates climate assumptions will be “forthcoming.”

The 12 members of the California Congressional Delegation who signed the petition requested that Governor Brown not proceed with the canal until his administration answers basic questions. Full disclosure should be provided to all Californians and every taxpayer and Southern California ratepayer. Absent a responsible policy firmly in place, this proposal looms as a giant recipe for disaster, not one for reliable, ecologically appropriate water service.

Victor Gonella is president of the Golden Gate Salmon Association <<http://goldengatesalmonassociation.com>> . Contact him at (707) 765-3073 or victor@ggsa.com.

Mike Henry, Assistant Executive Director

California Farm Water Coalition

6133 Freeport Blvd.

2nd Floor

Sacramento, CA 95822

(916) 391-5030

www.farmwater.org

From: Jason Peltier

Sent: Sunday, November 4, 2012 8:13 AM

To: Tom Birmingham; Joe Findaro; David Bernhardt

Subject: Opinion: Romney's victory message - Ken Khachigian - POLITICO.com

<http://www.politico.com/news/stories/1112/83211.html?hp=118>

From: Tom Birmingham

Sent: Wednesday, November 28, 2012 12:04 PM

To: 'Watts, John (Feinstein)'

CC: 'Joseph T. Findaro'; 'Bernhardt, David L.'; 'Karen, Catherine'

Subject: Support Letter Re: FY 13 Energy and Water Approps

Attachments: Microsoft_Word_-_Ltr_to_Feinstein_re_FY_13_Energy_and_Water_Approps(kclark-66).pdf

John,

Attached is the support letter you requested. Thank you for your continued help.

Tom



Westlands Water District

3130 N. Fresno Street, P.O. Box 6056, Fresno, California 93703-6056, (559) 224-1523, FAX (559) 241-6277

November 28, 2012

The Honorable Dianne Feinstein
United States Senate
331 Hart Senate Office Building
Washington, DC 20510

RE: California Water Provisions in FY13 Energy & Water Appropriations Bill

Dear Senator Feinstein:

I am writing to express Westlands Water District's support for the California water provisions that you have proposed for the Fiscal Year 2013 Energy and Water Appropriations bill. These provisions would allow the Bureau of Reclamation to participate in groundwater banking projects, clarify and streamline the water transfers provisions of the Central Valley Project Improvement Act, allow Reclamation to provide drought planning assistance to Central Valley Project contractors, allow Reclamation to enter into agreements with joint powers authorities created under state law for surface storage studies, and require Reclamation to develop a plan to provide additional water deliveries to Central Valley Project contractors.

As you and I have discussed, the actions authorized by these provisions are not a perfect solution to the chronic water supply shortages that have affected the people who live and work on the westside of the San Joaquin Valley. However, these provisions have the potential of providing real water supply improvements while we pursue long-term and more permanent legislative, administrative, and physical solutions to these chronic water supply shortages. For the reasons described above, Westlands supports the provisions you have offered for inclusion in the Fiscal Year 2013 Energy & Water Appropriations legislation.

Thank you for your continued efforts on this vitally important issue.

Very truly yours,

Thomas W. Birmingham
General Manager

From: Watts, John (Feinstein)
Sent: Wednesday, November 28, 2012 1:58 PM
To: 'Tom Birmingham'
CC: 'Joseph T. Findaro'; 'Bernhardt, David L.'; 'Karen, Catherine'; Peterson, James (Feinstein)
Subject: RE: Support Letter Re: FY 13 Energy and Water Approps



Tom,



Thanks for the letter! The other water districts that I mentioned to you have sent letters to Rep. Frelinghuysen and Rep. McCarthy. Would you be willing to send your letter to them, and copy Senator Feinstein? Their addresses are below.

We greatly appreciate all your work on this.

Best,

John

Rep. Rodney Frelinghuysen
2369 Rayburn HOB
Washington DC 20515-3011
Tel 202--
Chief of Staff: Nancy Fox Nancy.Fox@mail.house.gov

Rep. Kevin McCarthy
326 Cannon HOB
Washington DC 20515-0522
Tel 202--
Chief of Staff: James Min James.Min@mail.house.gov

-----Original Message-----

From: Tom Birmingham [<mailto:tbirmingham@westlandswater.org>]
Sent: Wednesday, November 28, 2012 2:04 PM
To: Watts, John (Feinstein)
Cc: 'Joseph T. Findaro'; 'Bernhardt, David L.'; 'Karen, Catherine'
Subject: Support Letter Re: FY 13 Energy and Water Approps

John,

Attached is the support letter you requested. Thank you for your continued help.

Tom

From: Watts, John (Feinstein)
Sent: Wednesday, November 28, 2012 2:00 PM
To: 'Tom Birmingham'
CC: 'Joseph T. Findaro'; 'Bernhardt, David L.'; 'Karen, Catherine'; Peterson, James (Feinstein)
Subject: RE: Support Letter Re: FY 13 Energy and Water Approps

Thanks again.

-----Original Message-----

From: Tom Birmingham [<mailto:tbirmingham@westlandswater.org>]
Sent: Wednesday, November 28, 2012 3:59 PM
To: Watts, John (Feinstein)
Cc: 'Joseph T. Findaro'; 'Bernhardt, David L.'; 'Karen, Catherine'; Peterson, James (Feinstein)
Subject: RE: Support Letter Re: FY 13 Energy and Water Approps

Yes, I will draft another letter and send it to these House members.

-----Original Message-----

From: Watts, John (Feinstein) [mailto:John_Watts@feinstein.senate.gov]
Sent: Wednesday, November 28, 2012 12:58 PM
To: 'Tom Birmingham'
Cc: 'Joseph T. Findaro'; 'Bernhardt, David L.'; 'Karen, Catherine'; Peterson, James (Feinstein)
Subject: RE: Support Letter Re: FY 13 Energy and Water Approps



Tom,


Thanks for the letter! The other water districts that I mentioned to you have sent letters to Rep. Frelinghuysen and Rep. McCarthy. Would you be willing to send your letter to them, and copy Senator Feinstein? Their addresses are below.

We greatly appreciate all your work on this.

Best,

John

Rep. Rodney Frelinghuysen
2369 Rayburn HOB
Washington DC 20515-3011
Tel 202--
Chief of Staff: Nancy Fox Nancy.Fox@mail.house.gov

Rep. Kevin McCarthy
326 Cannon HOB
Washington DC 20515-0522
Tel 202--
Chief of Staff: James Min James.Min@mail.house.gov

-----Original Message-----

From: Tom Birmingham [<mailto:tbirmingham@westlandswater.org>]
Sent: Wednesday, November 28, 2012 2:04 PM
To: Watts, John (Feinstein)
Cc: 'Joseph T. Findaro'; 'Bernhardt, David L.'; 'Karen, Catherine'
Subject: Support Letter Re: FY 13 Energy and Water Approps

John,

Attached is the support letter you requested. Thank you for your continued help.

Tom

From: Tom Birmingham

Sent: Wednesday, November 28, 2012 2:48 PM

To: Nancy.Fox@mail.house.gov; James.Min@mail.house.gov

CC: 'Lombardi, Kyle'; 'Nelson, Damon'; 'Joseph T. Findaro'; 'Bernhardt, David L.'; 'Karen, Catherine'

Subject: Support Letter for California Water Provisions

Attachments: Ltr to Frelinghuysen re FY 13 Energy and Water Approps.pdf

Dear Ms. Fox and Mr. Min,

Attached is a letter of support related to the California water provisions offered by Senator Dianne Feinstein for the FY 13 Energy and Water appropriations bill. Thank you for your consideration of these comments.

Thomas Birmingham

General Manager



Westlands Water District

3130 N. Fresno Street, P.O. Box 6056, Fresno, California 93703-6056, (559) 224-1523, FAX (559) 241-6277

November 28, 2012

The Hon. Rodney Frelinghuysen
United States Representative
2369 Rayburn HOB
Washington DC 20515-3011

The Hon. Kevin McCarthy
United States Representative
326 Cannon HOB
Washington DC 20515-0522

RE: California Water Provisions in FY13 Energy & Water Appropriations Bill

Dear Messrs. Frelinghuysen and McCarthy:

I am writing on behalf of Westlands Water District to express its support for the California water provisions that Senator Dianne Feinstein has proposed for the Fiscal Year 2013 Energy and Water Appropriations bill. These provisions would allow the Bureau of Reclamation to participate in groundwater banking projects, clarify and streamline the water transfers provisions of the Central Valley Project Improvement Act, allow Reclamation to provide drought planning assistance to Central Valley Project contractors, allow Reclamation to enter into agreements with joint powers authorities created under state law for surface storage studies, and require Reclamation to develop a plan to provide additional water deliveries to Central Valley Project contractors.

The actions authorized by these provisions are not a perfect solution to the chronic water supply shortages that have so adversely affected the people who live and work on the westside of the San Joaquin Valley in California. However, these provisions have the potential of providing real water supply improvements while we pursue long-term and more permanent legislative, administrative, and physical solutions to these chronic water supply shortages. In addition, Westlands is unaware of any opposition to these provisions. For the reasons described above, Westlands supports the provisions Senator Feinstein has offered for inclusion in the Fiscal Year 2013 Energy & Water Appropriations legislation.

Thank you for your continued efforts on this vitally important issue.

Very truly yours,

Thomas W. Birmingham
General Manager

From: Jason Peltier

Sent: Thursday, January 24, 2013 10:30 AM

To: Tom Birmingham; D Nelson; Ara Azhderian; Ed Manning; Carolyn Jensen (cjensen@ka-pow. com); Joe Findaro; David Bernhardt; Tony Coelho; Cathrine Karen

Subject: Fwd: SWC: Gov. SOS Remarks

Begin forwarded message:

From: "Ann Newton" <anewton@fionahuttonassoc.com>

Date: January 24, 2013, 9:21:55 AM PST

Subject: SWC: Gov. SOS Remarks

All,

The Governor is still going thru his address, but the remarks were just posted online...water section is highlighted below.

Governor Brown Delivers 2013 State of the State Address

1-24-2013

SACRAMENTO – Governor Edmund G. Brown Jr. today delivered the 2013 State of the State Address. Below is the text as prepared for delivery:

Edmund G. Brown Jr.
State of the State Address
Remarks as Prepared
January 24, 2013

The message this year is clear: California has once again confounded our critics. We have wrought in just two years a solid and enduring budget. And, by God, we will persevere and keep it that way for years to come.

Against those who take pleasure, singing of our demise, California did the impossible.

You, the California legislature, did it. You cast difficult votes to cut billions from the state budget. You curbed prison spending through an historic realignment and you reformed and reduced the state's long term pension liabilities.

Then, the citizens of California, using their inherent political power under the Constitution, finished the task. They embraced the new taxes of Proposition 30 by a healthy margin of 55% to 44%.

Members of the legislature, I salute you for your courage, for wholeheartedly throwing yourself into the cause.

I salute the unions—their members and their leaders. You showed what ordinary people can do when they are united and organized.

I salute those leaders of California business and the individual citizens who proudly stood with us.

I salute the teachers and the students, the parents and the college presidents, the whole school community. As the great jurist, Oliver Wendell Holmes, once said when describing what stirs people to action: "Feeling begets feeling and great feeling begets great feeling." You were alarmed, you stirred yourselves to action and victory was the outcome.

That was 2012 and what a year!

In fact, both 2011 and 2012 were remarkable.

You did great things: Your 1/3 renewable energy mandate; the reform of workers compensation; the reorganization of state government; protecting our forests and strengthening our timber industry; reforming our welfare system; and launching the nation's first high speed rail system.

But, of course, governing never ends. We have promises to keep. And the most important is the one we made to the voters if Proposition 30 passed: that we would guard jealously the money temporarily made available.

This means living within our means and not spending what we don't have. Fiscal discipline is not the enemy of our good intentions but the basis for realizing them. It is cruel to lead people on by expanding good programs, only to cut them back when the funding disappears. That is not progress; it is not even progressive. It is illusion. That stop and go, boom and bust, serves no one. We are not going back there.

The budget is balanced but great risks and uncertainties lie ahead. The federal government, the courts or changes in the economy all could cost us billions and drive a hole in the budget. The ultimate costs of expanding our health care system under the Affordable Care Act are unknown. Ignoring such known unknowns would be folly, just as it would be to not pay down our wall of debt. That is how we plunged into a decade of deficits.

Recall the story of Genesis and Pharaoh's dream of seven cows, fatfleshed and well favored, which came out of the river, followed by seven other cows leanfleshed and ill favored. Then the lean cows ate up the fat cows. The Pharaoh could not interpret his dream until Joseph explained to him that the seven fat cows were seven years of great plenty and the seven lean cows were seven years of famine that would immediately follow. The Pharaoh took the advice of Joseph and stored up great quantities of grain during the years of plenty. When famine came, Egypt was ready.

The people have given us seven years of extra taxes. Let us follow the wisdom of Joseph, pay down our debts and store up reserves against the leaner times that will surely come.

In the midst of the Great Depression, Franklin Roosevelt said: "There is a mysterious cycle in human events. To some generations much is given. Of other generations much is expected. This generation has a rendezvous with destiny."

We --right here in California-- have such a rendezvous with destiny. All around us we see doubt and skepticism about our future and that of America's. But what we have accomplished together these last two years, indeed, the whole history of California, belies such pessimism.

Remember how California began.

In 1769, under King Charles III, orders were issued to Jose de Galvez, the Visitor General of Baja California, to: "Occupy and fortify San Diego and Monterey for God and the King of Spain."

Gaspar Portola and a small band of brave men made their way slowly north, along an uncharted path. Eventually, they reached Monterey but they could not recognize the Bay in the dense fog. With their supplies failing, they marched back to San Diego, forced to eat the flesh of emaciated pack mules just to stay alive. Undaunted, Portola sent for provisions from Baja California and promptly organized a second expedition. He retraced his steps northward, along what was to become El Camino Real, the Kings Highway. This time, Father Serra joined the expedition by sea. The rest is history, a spectacular history of bold pioneers meeting every failure with even greater success.

The founding of the Missions, secularized and sold off in little more than 50 years, the displacement and devastation of the native people, the discovery of Gold, the coming of the Forty-Niners and adventurers from every continent, first by the thousands and then by the hundreds of thousands. Then during the Civil War under President Lincoln came the Transcontinental Railroad and Land Grant Colleges, followed by the founding of the University of California. And oil production, movies, an aircraft industry, the longest suspension bridge in the world, aerospace, the first freeways, grand water projects, Jet Propulsion Laboratory, Venture Capital, Silicon Valley, Hewlett Packard, Apple, Qualcomm, Google and countless others, existing and still just imagined.

What is this but the most diverse, creative and longest standing mass migration in the history of the world. That is California. And we are her sons and daughters. This special destiny never ends. It slows. It falters. It goes off track in ignorance and prejudice but soon resumes again—more vibrant and more stunning in its boldness.

The rest of the country looks to California. Not for what is conventional, but for what is necessary—necessary to keep faith with our courageous forebears.

What we have done together and what we must do in the coming years is big, but it pales in comparison to the indomitable courage of those who discovered and each decade thereafter built a more abundant California.

As Legislators, It is your duty and privilege to pass laws. But what we need to do for our future will require more than producing hundreds of new laws each year. Montaigne, the great French writer of the 16th Century, in his Essay on

Experience, wisely wrote: "There is little relation between our actions, which are in perpetual mutation, and fixed and immutable laws. The most desirable laws are those that are the rarest, simplest, and most general; and I even think that it would be better to have none at all than to have them in such numbers as we have."

Constantly expanding the coercive power of government by adding each year so many minute prescriptions to our already detailed and turgid legal system overshadows other aspects of public service. Individual creativity and direct leadership must also play a part. We do this, not by commanding thou shalt or thou shalt not through a new law but by tapping into the persuasive power that can inspire and organize people. Lay the Ten Commandments next to the California Education code and you will see how far we have diverged in approach and in content from that which forms the basis of our legal system.

Education

In the right order of things, education—the early fashioning of character and the formation of conscience—comes before legislation. Nothing is more determinative of our future than how we teach our children. If we fail at this, we will sow growing social chaos and inequality that no law can rectify.

In California's public schools, there are six million students, 300,000 teachers—all subject to tens of thousands of laws and regulations. In addition to the teacher in the classroom, we have a principal in every school, a superintendent and governing board for each school district. Then we have the State Superintendent and the State Board of Education, which makes rules and approves endless waivers—often of laws which you just passed. Then there is the Congress which passes laws like "No Child Left Behind," and finally the Federal Department of Education, whose rules, audits and fines reach into every classroom in America, where sixty million children study, not six million.

Add to this the fact that three million California school age children speak a language at home other than English and more than two million children live in poverty. And we have a funding system that is overly complex, bureaucratically driven and deeply inequitable. That is the state of affairs today.

The laws that are in fashion demand tightly constrained curricula and reams of accountability data. All the better if it requires quiz-bits of information, regurgitated at regular intervals and stored in vast computers. Performance metrics, of course, are invoked like talismans. Distant authorities crack the whip, demanding quantitative measures and a stark, single number to encapsulate the precise achievement level of every child.

We seem to think that education is a thing—like a vaccine—that can be designed from afar and simply injected into our children. But as the Irish poet, William Butler Yeats said, "Education is not the filling of a pail but the lighting of a fire."

This year, as you consider new education laws, I ask you to consider the principle of Subsidiarity. Subsidiarity is the idea that a central authority should only perform those tasks which cannot be performed at a more immediate or local level. In other words, higher or more remote levels of government, like the state, should render assistance to local school districts, but always respect their primary jurisdiction and the dignity and freedom of teachers and students.

Subsidiarity is offended when distant authorities prescribe in minute detail what is taught, how it is taught and how it is to be measured. I would prefer to trust our teachers who are in the classroom each day, doing the real work — lighting fires in young minds.

My 2013 Budget Summary lays out the case for cutting categorical programs and putting maximum authority and discretion back at the local level—with school boards. I am asking you to approve a brand new Local Control Funding Formula which would distribute supplemental funds — over an extended period of time — to school districts based on the real world problems they face. This formula recognizes the fact that a child in a family making \$20,000 a year or speaking a language different from English or living in a foster home requires more help. Equal treatment for children in unequal situations is not justice.

With respect to higher education, cost pressures are relentless and many students cannot get the classes they need. A half million fewer students this year enrolled in the community colleges than in 2008. Graduation in four years is the exception and transition from one segment to the other is difficult. The University of California, the Cal State system and the community colleges are all working on this. The key here is thoughtful change, working with the faculty and the college presidents. But tuition increases are not the answer. I will not let the students become the default financiers of our colleges and universities.

Health Care

California was the first in the nation to pass laws to implement President Obama's historic Affordable Care Act. Our health benefit exchange, called Covered California, will begin next year providing insurance to nearly one million Californians. Over the rest of this decade, California will steadily reduce the number of the uninsured.

Today I am calling for a special session to deal with those issues that must be decided quickly if California is to get the Affordable Care Act started by next January. The broader expansion of Medi-Cal that the Act calls for is incredibly

complex and will take more time. Working out the right relationship with the counties will test our ingenuity and will not be achieved overnight. Given the costs involved, great prudence should guide every step of the way.

Jobs

California lost 1.3 million jobs in the great Recession but we are coming back at a faster pace than the national average. The new Office of Business and Economic Development — GoBiz —directly assisted more than 5,000 companies this past year.

One of those companies was Samsung Semiconductor Inc. headquartered in Korea. Working with the City of San Jose and Santa Clara County, GoBiz persuaded Samsung to locate their only research and development facility in the world here in California. The new facility in San Jose will place at least 2,500 people in high skill, high wage jobs. We also leveled the field on internet sales taxes, paving the way for over 1,000 new jobs at new Amazon distribution centers in Patterson and San Bernardino and now Tracy.

This year, we should change both the Enterprise Zone Program and the Jobs Hiring Credit. They aren't working. We also need to rethink and streamline our regulatory procedures, particularly the California Environmental Quality Act. Our approach needs to be based more on consistent standards that provide greater certainty and cut needless delays.

California's exports are booming and our place in the world economy has never been stronger. Our ties with The People's Republic of China in particular are deep—from the Chinese immigrants crossing the Pacific in 1848 to hosting China's next President in Los Angeles last February. This year we will take another step to strengthen the ties between the world's second and ninth largest economies. In April, I will lead a trade and investment mission to China with help from the Bay Area Council and officially open California's new trade and investment office in Shanghai.

Water

Central to the life of our state is water and one sixth of that water flows through the San Joaquin Delta.

Silicon Valley, the Livermore Valley, farmers on the East side of the San Joaquin Valley between Fresno and Kern County and farmers on the West side between Tracy and Los Banos, urban Southern California and Northern Contra Costa, all are critically dependent on the Delta for water.

If because of an earthquake, a hundred year storm or sea level rise, the Delta fails, the disaster would be comparable to Hurricane Katrina or Superstorm Sandy: losses of at least \$100 billion and 40,000 jobs. I am going to do whatever I can to make sure that does not happen. My proposed plan is two tunnels 30 miles long and 40 feet wide, designed to improve the ecology of the Delta, with almost 100 square miles of habitat restoration. Yes, that is big but so is the problem.

The London Olympics lasted a short while and cost \$14 billion, about the same cost as this project. But this project will serve California for hundreds of years.

Climate Change

When we think about California's future, no long term liability presents as great a danger to our wellbeing as the buildup of carbon dioxide and other greenhouse gases in the atmosphere.

According to the latest report from the World Bank, carbon dioxide emissions are the highest in 15 million years. At today's emissions rate, the planet could warm by more than 7 degrees Fahrenheit by the end of the century, an event unknown in human experience. California is extremely vulnerable because of our Mediterranean climate, long coastline and reliance on snowpack for so much of our water supply.

Tipping points can be reached before we even know we have passed them. This is a different kind of challenge than we ever faced. It requires acting now even though the worst consequences are perhaps decades in the future.

Again California is leading the way. We are reducing emissions as required by AB 32 and we will meet our goal of getting carbon emissions to 1990 levels by 2020.

Key to our efforts is reducing electricity consumption through efficiency standards for buildings and appliances. Over the last three decades, these pioneering efforts have saved Californians \$65 billion dollars. And we are not through yet.

We are also meeting our renewable energy goals: more than 20% renewable energy this year. By 2020, we will get at least a third of our electricity from the sun and the wind and other renewable sources—and probably more.

Transportation and High Speed Rail

In the years following World War II, California embarked on a vast program to build highway, bridges and roads.

Today, California's highways are asked to accommodate more vehicle traffic than any other state in the nation. Most were constructed before we knew about climate change and the lethal effects of dirty air. We now expect more.

I have directed our Transportation Agency to review thoroughly our current priorities and explore long-term funding options.

Last year, you authorized another big project: High Speed Rail. Yes, it is bold but so is everything else about California.

Electrified trains are part of the future. China already has 5000 miles of high speed rail and intends to double that. Spain has 1600 miles and is building more. More than a dozen other countries have their own successful high speed rail systems. Even Morocco is building one.

The first phase will get us from Madera to Bakersfield. Then we will take it through the Tehachapi Mountains to Palmdale, constructing 30 miles of tunnels and bridges. The first rail line through those mountains was built in 1874 and its top speed over the crest is still 24 miles an hour. Then we will build another 33 miles of tunnels and bridges before we get the train to its destination at Union Station in the heart of Los Angeles.

It has taken great perseverance to get us this far. I signed the original high speed rail Authority in 1982—over 30 years ago. In 2013, we will finally break ground and start construction.

Conclusion

This is my 11th year in the job and I have never been more excited. Two years ago, they were writing our obituary. Well it didn't happen. California is back, its budget is balanced, and we are on the move. Let's go out and get it done.



Ann Newton
Account Supervisor
Fiona Hutton & Associates, Inc.
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From: Tom Birmingham
Sent: Saturday, February 9, 2013 11:48 AM
To: 'Weaver, Kiel'
CC: jpeltier@westlandswater.org; 'Bernhardt, David L.'; 'Joseph T. Findaro'
Subject: Oversight Hearing
Attachments: Smelt Distribution.png; Smelt Distribution 2.png; Smelt Distribution 3.png; 2013 OCAP BiOp Impacts Tally.pdf

Kiel,

When we met on January 31 we talked about the potential of the Subcommittee on Water and Power conducting oversight hearings. One subject of a potential hearing is the loss of water by the Central Valley Project and the State Water Project as a result of restrictions on project operations under the 2008 Delta smelt biological opinion in the 2012 - 13 water year. From December 7, 2012 through today, the CVP and SWP have lost in excess of 700,000 acre-feet of water due to these restrictions.

The export cuts we have experienced since early December have been imposed under the Smelt biological opinion because take of adult delta smelt by the SWP and CVP this season (Dec. 2012 – February 2013) is higher than in any previous year of 2008 BiOp/RPA implementation. If take of adult delta smelt continues at this rate during February and March, the adult take will exceed the take levels in the BiOp's incidental take statement ("ITS"). FWS has imposed further pumping restrictions, based on a goal of not exceeding the take estimates in the ITS.

People often refer to the values in an ITS as a "take limits." However, to the extent that use of this term implies that the estimate of take in an ITS cannot be exceeded without jeopardizing the species in violation of ESA section 7(a)(2), "limits" is a misnomer. The take numbers calculated in an ITS are not the threshold for jeopardy or adverse modification, but instead are supposed to be merely estimates of what FWS believes the take will be from a proposed action. The purpose of the number in the ITS is to estimate the expected number of a species that will be taken by the proposed action, not set a "do not exceed" limit. If the estimate of take in the ITS is exceeded, then consultation must be reinitiated. But exceeding the take estimate does not itself require that an action that is causing take cease or even be modified. The appropriate response to exceeding the take estimate is instead properly developed through reinitiation of consultation, and should be based on the standards of the ESA including use of the best available scientific data.

The ITS in the 2008 BiOp RPA estimated likely adult take using only three years of data, 2006-2008. FWS stated it believed these years best approximated expected salvage under RPA Component 1, because the smelt abundance and operations in these three years most closely represents expected future conditions under the RPA. FWS divided the adult salvage in each of these years by the corresponding FMWT index from the prior year (Sept. – Dec.), which created what FWS called the cumulative salvage index or CSI:

Year	FMWT Index	Adult Salvage	Cumulative Salvage Index (CSI)
2006	26	216	8.3
2007	41	36	0.88
2008	28	352	12.6
Average			7.25

FWS used the average CSI from these three years to calculate the incidental take for any year by the simple formula: Incidental take = 7.25 * Prior Year's FMWT Index

In sum, adult smelt take in the ITS is simply 7.25 multiplied by whatever the previous year's FMWT index is. For 2012, the take estimate is therefore: 7.25 * 42 = 305 adult smelt.

In the litigation on the 2008 BiOp, the district court remanded the ITS because it found several flaws in FWS's methods of calculating expected salvage under the RPA. The court found that these flaws created an unrealistically low take estimate for adult smelt. Therefore, exceeding the take levels in the ITS this year should be no surprise. It was bound to happen because the ITS numbers were artificially low and not a realistic estimate of adult take levels that could occur from operations under the RPA. Moreover, if the FWS used the same data set to calculate incidental take that it used to establish permissible levels of reverse flow in Old and Middle River, the ITS level would be more than double the number in the RPA. In addition, given the current distribution of smelt, it has been suggested that exceeding the take levels in the ITS will not affect abundance of the species next year.

One particularly disturbing aspect of the ITS for the CVP and SWP is that the authorized take level (305) is multiples less than incidental take for other activities, such as conducting scientific studies on Delta smelt. I am informed that the USGS has consulted on scientific studies it conducts, and the USGS is permitted to take in excess of 1,000 Delta smelt. One has to wonder why taking in excess of 1,000 smelt for scientific studies will not jeopardize the continued existence of the species, but taking 305 smelt by the projects is assumed to jeopardize the species. Stated differently, it's apparently okay to kill more than 1,000 fish for scientific study, but if the projects take a fraction of that number, the economy of the state suffers losses in the billions of dollars.

Among the questions that could be asked at an oversight hearing are:

1. How was the ITS in the 2008 BiOp calculated?
2. Why was such a limited data set used to calculate the ITS?
3. Had a more expansive data set been used to calculate the ITS, what level of incidental take been authorized?
4. Should the ITS have been modified in light of the district court's ruling that it was arbitrary and capricious?
5. What are permissible levels of incidental take of smelt under other incidental take statements issued by the FWS?
6. How can the disparity between different levels of authorized take be reconciled?
7. Were the restrictions imposed on operations CVP and SWP necessary to avoid jeopardy or adverse modification of critical habitat in this particular water year?
8. What population level effects to the species would have resulted had the restrictions not been imposed?
9. How much water was lost by the CVP and SWP because of restrictions imposed under the 2008 BiOp?
10. What are the economic losses resulting from that loss of water?
11. What are Reclamation, the action agency, and FWS doing to avoid future losses?

Please let me know if you think the Subcommittee would be interested in conducting a hearing on this subject. If you need additional information, please let me know.

Thank you,
Tom